Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1424
FACULTY OF SCINECE AND TECHNOLOGY
T.Y.B.Tech.(CSE) (Sem-V)
Elective- User Interface Technology
(Revised)

[Time: Two Hours] **[Max.Marks:40]**

Please check whether you have got the right question paper.

N.B
1. Q.No.1 and Q.No.5 are compulsory.
2. Attempt any two questions from remaining questions from each section.

Section A

Q.1 Attempt any three 06
a) What is protocol? Enlist types of protocols.
b) Differentiate between static & dynamic web pages.
c) What are semantic elements in HTML5?
d) What is media query?
e) What is WWW?

Q.2 Explain the working of HTTP protocol. 07

OR

Describe the main types of computer networks.

Q.3 Describe important features of CSS3 07

OR

Explain the working of bootstrap grid systems?

Q.4 What is HTML5? Explain the important features of HTML5 07

OR

Explain fluid, fixed, adaptive and responsive layouts.

Section B

Q.5 Attempt any three 06
a) Why jQuery is needed?
b) What is JSON?
c) Write a syntax to create away objects in JavaScript
d) What are jQuery selectors?
e) Give features of JavaScript

Q.6 Write a code for showing JavaScript scope. 07

OR

What is JavaScript? Describe the built in functions of JavaScript.

Q.7 Explain the use of JSON.parse ( ) and JSON.stringify () methods of JSON. 07

OR

Differentiate between JSON and AJAX.

Q.8 Explain jQuery DOM traversing with example 07

OR

Illustrate the use of jQuery events with example.

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1439
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B.Tech. (CSE) (Sem-VI)
Principal of Compiler Design
[Rev]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B 1) Q.1 & Q.6 are compulsory.
2) Solve any two from remaining from each section.

SECTION-A

Q.1 Answer the following (Any Five) (10)

a) Enlist Compiler writing tools.
b) Draw transition diagram for token identifier
c) Define LR grammar
d) What is unambiguous grammar.
e) What is operator grammar
f) Apply left factoring in the following grammar
$S \rightarrow iEtS|iEtSeS|a$
$E \rightarrow b$

Q.2 a) Explain design and implementation of lexical analyzer for tokens identifiers, constant & keywords. (08)
b) Explain various phases of compiler in detail. (07)

Q.3 a) Construct predictive parser table for given grammar. (08)
$E \rightarrow TE'$
$E' \rightarrow +TE'|epsilon$
$T \rightarrow FT'$
$T' \rightarrow * FT'|epsilon$
$F \rightarrow id|(E)$

b) Construct the SLR parsing table for the given grammar. (07)
$S \rightarrow AA$
$A \rightarrow aA|b$

Q.4 a) Construct LALR parsing table for the given grammar & accept the given string. (08)
$S \rightarrow CC$
$C \rightarrow cC|d$

b) Construct LR(o) collection of items for given ambiguous grammar (07)
$E \rightarrow E + E|E * E|(E)|id$

Q.5 a) Write short note on LR Parser (7)

b) What is operator precedence parser. Accept the string $'id + id + id'$ wing operator precedence algorithm. Construct passing table (8)

$$E \rightarrow E + E|E * E|id$$

SECTION B

Q.6 Answer the following (Any five) (10)

a) What is self organizing list?
b) Enlist types of errors in compiler phases
c) Write SDT scheme for syntax tree
d) What is Loop optimization technique.
e) Construct DAG for given expression a+b*c.
f) What is role of code generation phase.

Q.7 a) What is three address code. Convert the given expression to Quadruples, triples, indirect triples. (08)

$$a = b * -c + b * -c$$

b) Explain the translation of boolean expression statement using suitable example. (07)

Q.8 a) Explain various data structures used in symbol table. (07)

b) What are sources of optimization explain the strength reduction, constant propagation and induction variable reduction techniques of code optimization. (08)

Q.9 a) Explain lexical phase errors & syntactic phase errors in detail. (08)

b) Explain implementation of simple stack allocation scheme (07

Q.10 a) Explain the Error recovery methods in compiler design (07)

b) What is object program and explain various problems in code generation. (08)

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1446
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y.B.Tech. (CSE) (Sem-VI)
Computer Network
[Revised]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B.: 1) Question No.1 & 6 are compulsory.
2) Attempt any two from remaining Questions in each section.

Section – A

Q.1 Attempt any Five 10

a) What is the difference between a computer Network and a distributed system?
b) Define Protocol.
c) What is the role of Data link layer in Computer Network?
d) Define a Computer Network?
e) List any five Applications of Computer Network.
f) What do you mean by a Network topology.

Q.2 a) Explain with advantages & disadvantages Bus and Ring Topologies. 08
b) Write short Note on peer to peer communication. 07

Q.3 a) Draw and explain client & server model 08
b) Differentiate between connection oriented & connection less services. 07

Q.4 a) List and explain Error detection and correction methods. 08
b) List and explain flow control protocols in short. 07

Q.5 a) Write in detail LAN, MAN and WAN. 08
b) Draw & explain ISO OSI reference model. 07

Section B

Q.6 Attempt any five 10

a) What is the role of MAC layer?
b) What is checksum?
c) Define & explain piggy Backing?
d) Differentiate between Time Division multiplexing & frequency division multiplexing.
e) List the functions of transport Layer.
f) Draw timeline Diagram for simplex protocol.
g) What is difference between half Duplex &full Duplex communication.

Q.7	a)	Draw and Explain each field of an IP packet Header.	08
	b)	Differentiate between reliable & unreliable service protocols.	07
Q.8	a)	Write short Note on ALOHA Protocol	08
	b)	Differentiate between Pure ALOHA & SLOTTED ALOHA protocols.	07
Q.9	a)	Explain with example Hamming Distance used for Error Detection.	08
	b)	Draw and Explain STOP & WAIT protocol.	07
Q.10	a)	Differentiate between TCP & UDP.	08
	b)	What is the Role & Utility of an Acknowledgement in Computer Network Communication?	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1453
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B.Tech. (CSE) (Sem- VI)
Digital Image Processing
[Revised]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B.: i) Question numbers 1 and 6 are compulsory.
ii) Solve any two questions from Question numbers 2 to 5.
iii) Solve any two questions from Question numbers 7 to 10.

Section – A

Q.1 Attempt any five 10

a) Find the number of bits required to store 256×256 image with 16 gray levels.
b) What is box filter? Write one standard box filter.
c) Define redundancy.
d) What are different arithmetic and logical operations applicable to images?
e) List any four image file formats along with their full forms.
f) Differentiate between spatial domain and frequency domain.

Q.2 a) Find out – i) Euclidean ii) City block distances between p and q in the figure given below – (Consider 1 Blok=1unit) 08

			q
p			

b) With the help of a block diagram, Explain the components of image processing system. 07

Q.3 a) What is contrast stretching? Explain it with suitable example. 07
b) Explain image sampling and quantization. 08

Q.4 a) What is fidelity criteria? Which are the types of fidelity criteria? Explain each type in detail. 07
b) A 4×4, 3 bits/pixel original image is given by 08

0	0	0	4
1	1	1	5
1	2	2	7
2	2	2	7

i) Apply histogram equalization to the image by rounding the resulting image pixels to integers
ii) Sketch the transformation function, the histogram of the original image and histogram of equalized image.

Q.5 a) With the help of a block diagram, explain image compression model. 08
b) Describe sharpening spatial filters. 07

Section B

Q.6 Attempt any five 10

a) What is the need of structuring element in morphological image processing?
b) Which are the secondary colors of light?
c) Write the line detection masks for horizontal and vertical line.
d) What do you mean by P(Ri U Rj)=False?
e) What is representation and description in image processing?
f) Define curvature.

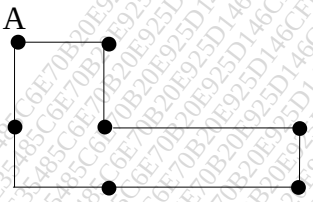
Q.7 a) Describe opening and closing in morphological processing. 08
b) Explain detection of discontinuity with reference to edge detection. 07

Q.8 a) Explain – 08
i) RGB Color model
ii) HIS Color model

b) Describe hit or miss transformation with suitable example. 07

Q.9 a) What is region growing? Explain it in detail. 08
b) Explain region splitting and merging with example. 07

Q.10 a) Describe topological descriptors. 07
b) Find the shape number of the following figure. Explain how it is invariant for changing the starting point, reflexion and rotation. (Consider A is starting point) 08



Total No. of Printed Pages:02

SUBJECT CODE NO:- H-1468
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B.Tech. (CSE) (Sem-VI)
Programming in .Net
[Revised]

[Time: Two Hours] **[Max. Marks:40]**

Please check whether you have got the right question paper.

N.B.: 1) Q.1 from Section A and Q.5 from Section B are compulsory.
2) From the remaining solve any two questions from each Section.

Section A

Q.1 Solve any three questions. 06

a) What is Namespace? List any two inbuilt namespaces.
b) What is JIT compiler?
c) Write a code to show Has a relation between A class and B class.
d) How to get value from TextBox in C# program?
e) How will you check is Mouse pressed on a Form or not?

Q.2
a) What is CLR? 03
b) Explain different components of Assembly. 04

Q.3
a) How to achieve method overriding in C#? 03
b) How to define and use delegate? Explain with code. 04

Q.4
a) How to provide tool tip on TextBox? 03
b) What is use the of RadioButton and CheckBox control? Explain it along with its properties. 04

Section B

Q.5 Solve any three questions. 06

a) What is simple data binding?
b) Can we create hyperlink on button? How?
c) Differentiate server side and client side controls.
d) What is DataSet?
e) How to create session?

Q.6
a) For GymClub sign up form, y. User fills username, password, email id and age. Username and password are mandatory. Only those users can be member of club whose age is above 18. List the controls which you will use in design web form. How will you validate it in web form? 04

b) Which control is used to display advertisements on web pages? How? 03

Q.7 a) Explain Cookies. 03

b) Explain Navigation controls. 04

Q.8 a) In Employee database, emp_id, emp_name, date of joining and salary of employee is maintained. Write a code to display employee on web page whose salary is above 20000. 04

b) What is DataAdapter? Explain with an example. 03

H-614

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-614
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CGPA) (CSE/IT) (Sem-II)
System Programming
[Revised]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B. 1) Q. No. 1 and Q. No. 6 are compulsory.
2) Attempt any two remaining questions from each section.
3) Assume suitable data, if necessary.

Section -A

Q.1 Attempt any five from following. 10
a) Differentiate system software and application software. Give examples of each.
b) Define assembler.
c) Explain back patching.
d) Explain any two assembler directives.
e) List functions of macroprocessor.
f) Clerify macro instructions is part of assembler or not.
g) Explain role of symbol table.
h) What is use of Literal table?

Q.2 a) Explain life cycle of program. 08
b) Explain pass 1 and pass 2 data structures required in assembler design. 07

Q.3 a) Write an algorithm for implementation of Pass 1 of macro. 08
b) Explain macro call within macro with example. 07

Q.4 a) Explain forward reference problem with example. 08
b) Explain language processing activities. 07

Q.5 a) Consider following assembly code and find variant I & II of intermediate code. 10

```
        START   200
        READ    A
LOOP    MOVER   AREG, A
        .
        .
        SUB     ARRG, '=1'
        BC      GT, Loop
A       DS      1
        LTORG
        .
        .
```

b) Explain any two features of macro facility. 05

Section- B

Q.6 Attempt any five from following: 10

a) List different loader schemes
b) Define Binder
c) Define Semantic gap
d) Define token and lexemes
e) Define linker
f) Construct abstract syntax tree for expression a + b ∗c
g) Define scanner
h) Define Debugger

Q.7
a) Explain Relocating loader with advantages & disadvantages. 08
b) Explain Lexical analysis. 07

Q.8
a) Explain types of grammar with example. 08
b) Explain overlay structure. 07

Q.9
a) Write an algorithm for shift reduces parsing. 08
b) Explain LEX and YACC. 07

Q.10
a) Explain any two causes of semantic gap in detail. 08
b) Explain absolute loader scheme. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1006
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B.Tech. (CSE) (Sem-VI)
Data Mining & Warehousing
[Old]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B i. Q. No.1 and Q. No.6 are compulsory.
ii. Solve any two questions from remaining questions of each section.

Section A

Q.1 Solve any five 10

a. For a Banking Institution, identify operational applications that would feed data into the Data warehouse.

b. A data warehouse is subject oriented. What would be the major critical business subjects for retail sales dept.

c. Indicate true or false, OLAP facilitates interactive queries and complex uses.

d. What is Data Quality

e. What is a Data Cube

f. Sate applications of Data Warehouse.

Q.2 a. The minimum and maximum values for attribute income are $12000 and $98000 dollars respectively. Map income to the range [0.0, 1.0] find mapping for a value of $73600 for income. Mention other strategies for Data Normalisation. 08

b. Explain the major steps in data preprocessing. 07

Q.3 a. Differentiate between operational database systems and Data warehouse. 08

b. Explain DSS Knowledge Base. 07

Q.4 a. Suppose that a data warehouse for Big-university consist of four dimensions student, course, semester and instructor and two measures count and ang-grade. Draw star and snowflake scheme for above Data warehouse. 08

b. Compare ROLAP and MOLAP 07

Q.5 a. State various approaches of Data warehouse design process. 08

b. Explain significant Role of Metadata in Data warehouse. 07

Section B

Q.6 **Solve any five** 10

a. What is confidence in association rule.
b. Define Data Mining
c. What is clustering.
d. What is outlier
e. Give applications of Data Mining
f. What is Rule Based Classification

Q.7 A) Describe Data Mining functionalities characterization and Discrimination. 08
B) Explain Market Basket Analysis 07

Q.8 A) Briefly outline steps for decision tree classification. 08
B) Explain Support Vector Machines. 07

Q.9 A) Explain types of Data is Cluster Analysis 08
B) Explain classification by Back propagation method. 07

Q.10 Write short notes on 15

i. Mining Text Databases
ii. Mining Data Streams.
iii. Mining Multimedia Databases

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1019
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y.B.Tech.(CSE) (Sem VI)
Digital Image Processing
[OLD]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B i) Question No.1 and 6 are compulsory.
ii) Solve any two questions from Question Nos. 2 to 5.
iii) Solve any two questions from Question Nos. 7 to 10.

Section A

Q.1 Answer the following (Any five) 10

i) What is image acquisition?
ii) Specify the 4-neighbours of a pixel.
iii) What is the translation property of two dimensional Fourier transform?
iv) Define spatial domain processing.
v) Which are the two components by which the function $f(x, y)$ is characterized?
vi) Find the number of bits required to store 256×256 image with 16 gray levels.

Q.2 a) Describe logical operations on binary images with diagram. 08
b) What is histogram? Explain histogram in detail. 07

Q.3 a) Consider the image segment shown. 08
Let V = {1,2} and compute the lengths of the shortest 4-, 8- and m-path between p and q.
If a particular path does not exist between these two points, explain why.

	3	1	2	1	(q)
	2	2	0	2	
	1	2	1	1	
(p)	1	0	1	2	

b) Describe sampling and quantization with diagram. 07

Q.4 a) Explain HADAMARD transformation in detail. 08
b) Describe discrete fourier transform. 07

Q.5 a) What is frequency domain processing? Explain lowpass filtering in frequency domain. 08
b) Explain smoothing filters for spatial domain. 07

Section B

Q.6	Answer the following (Any five)		10
	i)	What is lossy compression?	
	ii)	Define mean square error.	
	iii)	What is segmentation?	
	iv)	What is multilevel thresholding?	
	v)	Define saturation.	
	vi)	What are secondary colors?	
Q.7	a)	Explain any four image file formats.	08
	b)	What are fidelity criteria? Explain the types of fidelity criteria.	07
Q.8	a)	What is the basic formulation of region oriented segmentation? Explain region growing by pixel aggregation.	07
	b)	Explain detection of discontinuity with reference to edge detection.	08
Q.9	a)	Consider a source that emits six symbols $\{a_1, a_2, a_3, a_4, a_5, a_6\}$ with probabilities 0.1, 0.4, 0.06, 0.1, 0.04, 0.3 respectively. Find a Huffman code for this source. Compute the expected code length of this Huffman code.	08
	b)	Describe wavelet coding.	07
Q.10	a)	Explain different color transformations.	07
	b)	What is dilation and erosion in Morphological image processing? Explain with example.	08

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1044
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y.B.Tech.(CSE) (Sem VI)
Principles of Complier Design
[OLD]

[Time: Three Hours] **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B i) Q.1 & Q.6 are compulsory.
ii) Solve any two questions from remaining in each section.

SECTION – A

Q.1 Answer the following questions. 10
a) Define Context free grammar.
b) What is Pause tree
c) State the role of lexical analyzer
d) Define left factoring
e) What is compiler

Q.2 a) Explain the compiler writing tools in detail. 08
b) Explain the assembler, compiler and interpreter. 07

Q.3 a) Discuss the problems in top downparsing with suitable examples. Explain how they can be overcome? 07
b) Construct SLR Parser for following grammar 08

$$S \rightarrow aSSb$$
$$S \rightarrow aSSS$$
$$S \rightarrow c$$

Show moves of above parser on one valid input string & one invalid input string.

Q.4 a) How to construct canonical LR parsing table. 07
b) Explain automatic parser generator in detail. 08

Q.5 a) Explain LR grammars &LL(1) grammar. 07
b) Explain predictive parser with FIRST & FOLLOW Set using any example. 08

SECTION – B

Q.6 Answer the following questions. 10
a) What is symbol table
b) Enlist the data structures used in symbol table.
c) What is runtime storage administration
d) Write SDT scheme for postfix notation.
e) Define syntax tree

Q.7	a)	Explain implementation of block structure languages.	08
	b)	Write short note on Code generation phase.	07
Q.8	a)	Explain DAG representation of basic blocks with one example.	07
	b)	What are the problems in code generation? Explain in detail.	08
Q.9	a)	Explain contents of symbol table in detail.	08
	b)	Explain SDT translation scheme for boolean expressions.	07
Q.10	a)	Consider the following basic block	08

$$t_1 = b + c$$
$$t_2 = d * e$$
$$t_3 = b + c$$
$$t_4 = t_2 * t_3$$
$$t_5 = t_4 * F$$
$$x = t_1 - t_5$$

Which of the following optimization are possible to be carried out with above basic blocks & why?

i) Common sub expression elimination.

ii) Dead code elimination

b) Explain the various types of error with example in detail. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1070
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B. Tech. (CSE) (Sem-VI)
Linux Operating System
[Old]

[Time: Three Hours] **[Max. Marks: 80]**

Please check whether you have got the right question paper.

N.B
1. Q.1 from section A and Q.6 from section B are compulsory.
2. From the remaining solve any two questions from each section.

Section A

Q.1 Solve any five questions. 10

1) The first thing that is searched when a command references a file is it.
   a) i-node b) i-node number c) permission setting d) None of the above

2) Which one of the following commands copies files with the .txt extension from /dir1 into /dir2 while preserving files in dir l?
   a) Mv--copy/dir1/*.txt/dir2 b) mv /dir1 /*.txt / dir2
   c) cp /dir1 /*.txt /dir 2 d) cp /dir2 /dir1 /*.txt

3) Give command to Create a new file “new.txt” that is a concatenation of “file 1. txt” and “ file 2. txt”.
4) This is a graphical user interface (GUI) and set of computer desktop applications for Linux users.
   a) Gnutella b) Galileo c) GIMP d) GNOME

5) Enlist various run levels
6) What types of files are typically in the /etc directory.
   a)configuration file b) miscillineous file
   c)Standard linux command d)List of devices

Q.2 a) Differentiate between Ext3 and Ext4 file system. 07

b) Discuss GRUB, init and its configuration file. How to boot system in various run levels? 08

Q.3 a) Explain various file permissions. 07

b) Explain following commands 08
   1) Od 2) tr 3) Wc 4) chown 5) cp 6) cat

Q.4 a) Explain file system Layout. 07

b) Define kernel. What are various types of kernel? What is kernel versions. 08

Q.5 a) Explain NFS in detail. 07

b) Explain following commands 08
1) tty 2) Wc 3) diff 4) mkfs 5) su 6) mkdir

Section – B

Q.6 Solve any five questions 10

a) What is dup () system call?
b) Enlist various backup commands.
c) What are various fileds of /etc /fstab
d) Write the syntax of while statement in shell script.
e) Suppose that you have configured one Linux system on an internal LAN to run a DNS server. Which of the following files need to be updated on each DNS client on the LAN to get them to utilize the DNS service?
a) /etc / hosts b) /etc / exports c) /etc /resolv. conf d) /etc /dns.conf

f) A file named my app has a mode of 755. If dnelson doesn't own this file and isn't a member of the group that owns the file, what can she do with it?
a) She can change the group that owns the file.
b) She can open the file, make changes, and save the file.
c) She can change ownership of the file.
d) She can run the file

Q.7 a) Explain open system call in detail. 07

b) Explain various user management commands. 08

Q.8 a) Explain the following file 1) /etc /hosts. allow 2) /etc/hosts. deny 07

b) Explain in detail various types of RAID. 08

Q.9 a) Write a short note on vi editor. 07

b) Explain Access control (ACL) list in detail. 08

Q.10 a) Write a shell script to change base name of all * .TXT file in current directory to * DOC. 07

b) Explain the syntax of writing rules iptables. Also explain how to add rules to monitor network traffic.k 08

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-1153
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B.Tech.(CSE) (Sem-VI)
Professional Ethics & Cyber Security
[Old]

[Time: Two Hours] **[Max. Marks:40]**

Please check whether you have got the right question paper.

N.B i) Question no.1 & 5 are compulsory.
ii) Solve any two questions from question no.2 to 4.
iii) Solve any two questions from question no.6 to 8.

Section A

Q.1 Solve any three 06

1. How does computer & IT create policy vacuums?
2. Define conceptual muddle.
3. List the type's professional relationships.
4. What does universal law means?
5. What are the benefits of Computer Technology?

Q.2 Explain the concept of utilitarianism with example. 07

OR

Explain the ten commandments of computer ethics. 07

Q.3 Specify & explain professional responsibilities / characteristics of computer professionals. 07

OR

What is hacking & it's types? Explain tracking hackers. 07

Q.4 Identify social issues & explain broad impact of computer. 07

OR

How to use informal & formal guidelines to make ethical decisions. 07

Section B

Q.5 Solve any three 06

1. Define encryption.
2. What kinds of trademarks can be registered?
3. Type of Intellectual properties. Enlist.
4. What is computer Forensics?
5. Differentiate between computer viruses & worms.

Q.6 Describe copyright on web content & its need 07

OR

What rights does a patent holder have? Explain details about types of patent. 07

Q.7 Describe computer forensics capabilities 07

OR

Who uses computer forensics? Describe in detail. 07

Q.8 Give some of the examples of cybercrimes and its impact on society. 07

OR

Define blended attacks & explain its characteristics. 07

Total No. of Printed Pages:03

SUBJECT CODE NO:- H-1178
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B.Tech.(CSE) (Sem V)
Theory of Computation
[Old]

[Time: Three Hours] **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B
i. Q. 1 & 6 are compulsory.
ii. Solve any two question from remaining in each section.

Section A

Q.1 Solve any five 10

a) State principle of mathematical induction
b) Differential between mealy & moore machine
c) If $L(r) = set\ of\ all\ strings\ over \sum = \{0.1\} ending\ with$'011'
d) What is CFG?
e) What is GNF?
f) What are application of Regular expression?

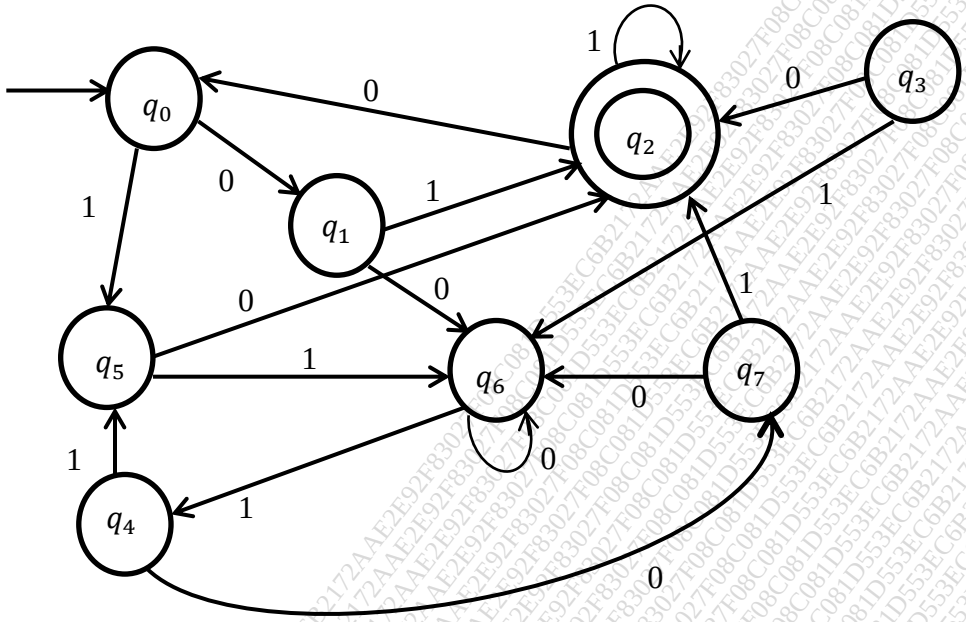
Q.2 a) Construct DFA equivalent to given NFA 08

State	a	b
$\longrightarrow q_0$	$\{q_0, q_1\}$	q_0
q_1	q_2	q_1
q_2	q_3	q_3
(q_3)	—	q_2

b) Construct a mealy machine which is equivalent to the moore machines given in table below & define mealy machine. 07

Present state	Next state		Output Δ
	$q = 0$	$q = 1$	
$\longrightarrow q_0$	q_1	q_2	1
q_1	q_3	q_2	0
q_2	q_2	q_1	1
(q_3)	q_0	q_3	1

Q.3 a) Construct minimum state automata equivalent to given DFA. 08



b) Explain Ambiguous grammar with example. 07

Q.4 a) For the grammar G which is defines 08

S ⟶ aB | bA

A ⟶ a | aS | bAA

B ⟶ b | bS | aBB

Where S as the starting symbol, write the left most & right most derivation for the string "bbaaba".

b) Find the context free grammar for following language 07

$$L = \{a^n b^m c^k / n = m \ \ or \ \ m \leq k; \ \ n \geq 0, m \geq 0, k \geq 0\}$$

Q.5 a) Explain chowsky hierarchy in detail. 07

b) Reduce the following grammar to CNF 08

S ⟶ ASA | bA

A ⟶ B | S

B ⟶ C

Section B

Q.6 Answer the following questions. 10

a) What is Linear bounded automata

b) What is bottom up passing?

c) What are properties of cfc language?

d) Define non deterministic PDA.

e) What is Regular set?

Q.7	a)	Construct PDA equivalent to the following context free grammar. $S \longrightarrow OBB$ $B \longrightarrow OS \mid 1S \mid O$ Test whether 010000 is in language of A	08
	b)	Explain various representations of tuning machine.	07
Q.8	a)	Design a Tuning machine to require all string's consisting of an even number of 1's and obtain computation sequence of '11'.	08
	b)	Write short note on Recursively enumerable languages.	07
Q.9	a)	Explain pumping lemma for CFL with suitable example.	07
	b)	Write the PMT system 'T' for the call for medness of parenthesis to check "(( ) (( )))"	08
Q.10	a)	Explain the types of turing machine in detail.	07
	b)	Construct DFA that accepts there are regular language defined the following right linear grammar. $S \longrightarrow bB$ $B \longrightarrow bC \mid aB \mid b$ $C \longrightarrow a$	08

Total No. of Printed Pages:03

SUBJECT CODE NO:- H-1199
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B.Tech.(CSE) (Sem-V)
Design & Analysis of Algorithm
[Old]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
i. Q. 1 and Q. 6 are compulsory.
ii. Attempt any two from remaining question's in each section.

Section A

Q.1 Answer the following question (any 5): 10

1) What is algorithm validation?
2) What is tightest upper bound that represents the no of swaps required to sort n numbers using selection sort.
3) Algorithm based on greedy method are used for solving
   i) Liner problem.
   ii) Optimization problem.
   iii) Quadratic problem.
   iv) Biquadratic problem.
4) Write the control abstraction for divide and conquer method.
5) define feasible and optimal solution
6) What is code tuning technique?

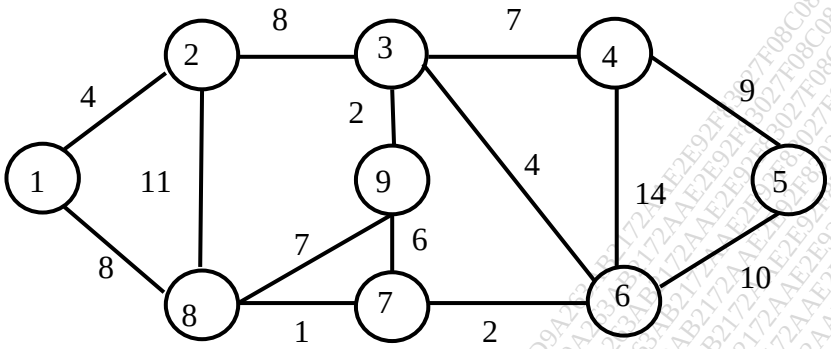
Q.2 a) Write short note on optimal merge pattern. 07
b) Explain Knapsack problem in detail. 08

Q.3 a) Explain binary search? Write algorithm for it. Consider the following elements of array A. 08

Index	1	2	3	4	5	6	7	8	9	10
element	-15	-10	0	7	12	30	45	58	82	104

b) Explain activity selection problem. 07

Q.4 a) What is minimum spanning tree? Explain Kruskal's algorithm with following example. 08



b) Explain various code tuning techniques. 07

Q.5 a) Explain quick sort with suitable example. 08

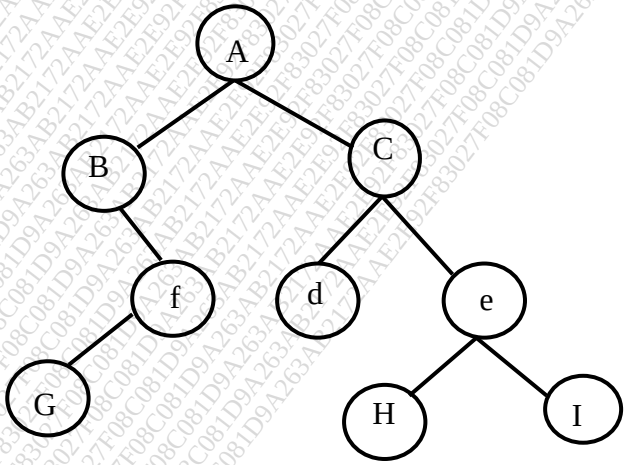
b) Write a short note on stressen's matrix multiplication. 07

Section B

Q.6 Solve any five: 10

a) What is difference between divide and conquer dynamic programming.

b) Find the tree traversal for following tree.



c) Define articulation point.

d) An adjacency matrix representation of graph can not contain information about.

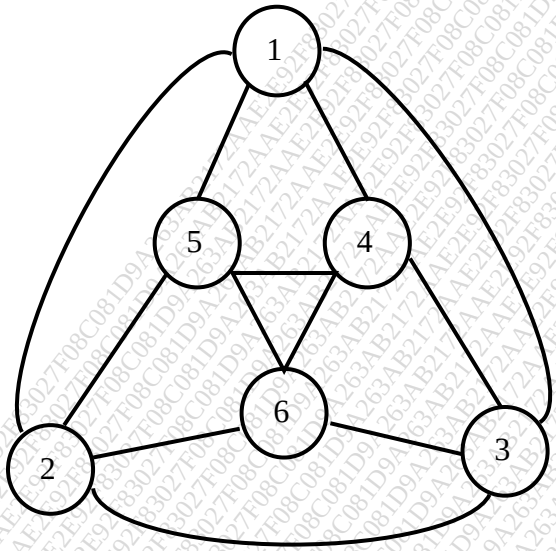
i) Nodes ii) Edges iii) Direction of edges iv) parallel edge

e) You can implement DFS using queue
a) True b) False

f) What is backtracking?

Q.7 a) Explain string editing? What is optimal cost of editing two strings "Monday" and "Friday". 08
b) Explain travelling salesperson problem. 07

Q.8 a) Explain sum of subset problem with suitable example. 08
b) Explain Hamiltonian cycle. Write algorithm for it. Find Hamiltonian cycle from following graph. 07



Q.9 a) Explain OBST in detail. 08
b) What is code optimization? Explain in detail. Write optimal code for following expression $A + (B/C) * D$. 07

Q10 a) Explain all pairs shortest path: 07
b) Define: 08
i) P-class problem.
ii) Deterministic & non-deterministic machine.
iii) Np hard problem.
iv) Np complete problem.

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1233
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B.Tech.(CSE) (Sem-V)
Relational Database Management Systems
[Old]

[Time: Three Hours] **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B 1. Question no.1 and 6 are compulsory.
2. Attempt any two questions from remaining questions from each section.

SECTION – A

Q.1 Attempt any five. 10

a) What is the arity and cardinality of following relation?

Roll no.	Name	Class	Marks
1	Sachin	TY	50
2	Ramesh	SY	60
3	Pooja	TY	70

b) Enlist the types of join in SQL.
c) What is physical data independence?
d) Enlist the applications of database management system.
e) What is use of having clause?
f) Define full functional dependency?
g) What is normalization?

Q.2 a) Explain boyce codd normal form with example. 08
b) Write a short note on 4^{th} normal form. 07

Q.3 a) What is DML? Explain any four commands of DML. 08
b) Explain unique and check constraints with example. 07

Q.4 a) Draw an ER diagram for the following scenario. 08

1. A company can have many departments
2. One department can control many projects
3. One employee works for only one department.
4. One department can have many employees
5. One employee can have many dependents.
6. Every department is managed by one manager who is also an employee.
7. One manager can supervise many employees.
8. Employees can works on many projects.
9. Many employees can work on same project.

b) Explain the disadvantages of traditional file systems. 07

Q.5 a) Write a short note types of attributes in ER Model. 08
b) Discuss the aggregate functions in SQL with example. 07

SECTION – B

Q.6 Attempt any five. 10
a) What is serial schedule?
b) What is concurrent schedule?
c) What are conflicting instructions?
d) Define lock point.
e) What is object oriented database management system?
f) Enlist the types of indices.
g) Define dense and sparse index.

Q.7 a) Explain the clustering index. 08
b) Write a short note on multilevel index. 07

Q.8 a) Explain sequential and clustering file organization. 08
b) Explain view serializability. 07

Q.9 a) Explain shadow paging scheme for recovery. 08
b) Write a short note on distributed database management system. 07

Q.10 a) Explain strict two phase locking protocol. 08
b) Write a short note on recoverable schedules. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1268
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y.B.Tech.(CSE) (Sem-V)
Operating Systems
[OLD]

[Time: Three Hours] **[Max. Marks: 80]**

Please check whether you have got the right question paper.

N.B
1. Question no.1 and 6 are compulsory.
2. Attempt any two questions from the remaining questions from each section.

Section A

Q.1 Attempt any five: 10
a) What is blocked process?
b) Define: process Spawning?
c) What is a Deadlock?
d) What is Multitasking?
e) What is PCB?
f) What is Thread?
g) What is context switching?

Q.2 a) What is process scheduling? Explain Priority scheduling. 08

b) Explain the role of an OS as an user interface. 07

Q.3 a) Describe the different OS services. 08

b) Explain the use of PCB in detail. 07

Q.4 a) Explain the different process states. 08

b) Write short note on Deadlock prevention. 07

Q.5 a) Explain Deadlock modeling. 08

b) In what way, the Deadlock can be avoided? 07

Section – B

Q.6 Attempt any five: 10
a) What is Swapping?
b) What is thrashing?
c) What is MMU?
d) Define : Virtual memory
e) Belady's Anomaly is -----
f) What is TLB?

	g)	What is a Segment?	
Q.7	a)	Write short note on Swapping.	08
	b)	Describe Embedded OS.	07
Q.8	a)	Explain Virtual memory.	08
	b)	Write a short note on Paging.	07
Q.9	a)	Explain the design principles of security.	08
	b)	Write short note on LRU page replacement algorithm.	07
Q.10	a)	Explain disk space management.	08
	b)	Write a short note on Deadline scheduling.	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1303
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B.Tech. (CSE) (Sem-V)
Advanced JAVA
[Old]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Q.1 from section A and Q.6 from section B are compulsory.
2. From the remaining solve any two questions from each section.

Section A

Q.1 Solve any five question 10

a) What is JApplet?
b) Define Port
c) What is the use of scrollpane?
d) Define lnet address
e) What is the use of java bean?
f) What is BDK?

Q.2 a) Describe any two layout manager with an example. 07

b) Design GUI for factorial application and display factorial of given number. 08

Q.3 a) What is the role of stub and skeleton in RMI? What are the steps to implement RMI application? 07

b) Write a code to implement online chat application using TCP/IP 08

Q.4 a) Explain property change event with an example. 08

b) How are Application builder categorized? 07

Q.5 a) Write a code to design login form (user name and password) and also check valid user. 07

b) For what purpose you will use JList and how? 08

Section – B

Q.6 Solve any five questions. 10

a) What is the purpose JSP?
b) What is session bean?
c) What is Re
d) What is Request – response model?
e) What is web . xml?
f) What is the use of import directives in jsp?

Q.7 a) Describe servlet life cycle. 07

b) Differentiate between forward and sendRedirect method of Request Dispatcher 08

Q.8 a) Explain Custom tags of JSP. 07

b) How to create session in JSP? How to access it? Write a sample code. 08

Q.9 a) Design a login form. Write a servlet to retrieve form values an display whether user is valid or not. 07

b) Explain request and response implicit objects of JSP with any its two methods. 08

Q.10 a) Explain the life cycle of enterprise bean 07

b) Explain message driven beans. 08

H-1351

Total No. of Printed Pages:1

SUBJECT CODE NO:- H-1351
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y.B.Tech.(CSE) (Sem-V)
System Software

[Time: Two Hours] **[OLD]** **[Max. Marks: 40]**

Please check whether you have got the right question paper.

N.B
1) Question 1 & 5 are compulsory
2) Attempt any two from remaining from each section

Section A

Q.1 Attempt any Three 06
a) What is the purpose of compiler
b) Why assembler is used
c) What is the role of linker
d) What is macro processor

Q.2 Give algorithm of macro processor (One Pass) 07

OR

Diagrammatically illustrate process of compilation with all system S/W involved 07

Q.3 Compare task of linker & loader 07

OR

How are machine independent and dependent macro processor different 07

Q.4 What is system software, how it is different from application software 07

OR

Give design options of macro processor 07

Section B

Q.5 Attempt any Three 06
a) What is purpose of editor
b) Why compiler has various phases
c) What is interpreter
d) What is purpose of debug monitor

Q.6 Explain design principles in detail 07

OR

Illustrate phases of compiler 07

Q.7 Write algorithm of two pass assembler 07

OR

How one pass & two pass assembler are different, explain 07

Q.8 What are various software tools, explain any two 07

OR

Compare working of compiler & assembler 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1383
FACULTY OF SCINECE AND TECHNOLOGY
T.Y.B.Tech.(CSE) (Sem-V)
Operating System
(Revised)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Q.No.1 and Q.No.6 are compulsory.
2. Attempt any two questions from the remaining questions from each section.

Section A

Q.1 Attempt any five: 10
a) Write OS Objectives?
b) What is Pre-emptive nature of a Process?
c) What is a Deadlock?
d) Enlist some Shell commands.
e) What is Race condition?
f) What is an Ostrich Law?
g) What is Context Switching?

Q.2
a) What is Process Scheduling? Explain Round Robin algorithm. 08
b) Write a note on Role of OS as an interface & as a resource manager. 07

Q.3
a) Describe the Critical section problem. 08
b) Explain the Producer Consumer problem. 07

Q.4
a) Explain Process scheduling criteria. 08
b) Write short note on Banker's algorithm. 07

Q.5
a) Explain Deadlock detection & Recovery. 08
b) Explain Peterson's solution for the process synchronization. 07

Section B

Q.6 Attempt any five: 10
a) What is Contiguous memory allocation?
b) What is Thrashing?
c) What is FIFO?
d) What is LRU?
e) Belady's Anomaly is …….
f) What is TLB?
g) What is Page Table?

Q.7	a)	Write short note on Swapping.	08
	b)	Describe inode& file descriptor.	07
Q.8	a)	Explain Virtual memory.	08
	b)	Write a short note on Paging.	07
Q.9	a)	Explain the file & Directory structure.	08
	b)	Find the page faults with string 123451265345 & frame size 3 using LRU policy.	07
Q.10	a)	Explain the Windows file structure.	08
	b)	Explain Best fit, Worst fit & First fit memory management techniques.	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1390
FACULTY OF SCINECE AND TECHNOLOGY
T.Y. B.Tech.(CSE) (Sem-V)
Software Engineering
(Revised)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B i) Q.No.1 from section A and Q.No.6 from section B are compulsory.
ii) Attempt any two questions from the remaining questions in each section
iii) Assume suitable data, if necessary.

Section A

Q.1 Solve any five: 10
a) What is software engineering? Enlist s/w application domains.
b) Draw a diagram to show software engineering layers.
c) What is data dictionary? What is its objective?
d) What is a use case diagram?
e) What are the steps in software design?
f) Enlist software architecture styles.
g) What is information hiding?
h) List software quality guidelines.

Q.2 a) Explain waterfall model, what are its limitations? 07
b) Explain software characteristics. 08

Q.3 a) Explain requirement elicitation techniques for software. 07
b) With respect to data modeling explain, Data objects, attributes, relationships cardinality & modality. 08

Q.4 a) What is functional modeling? Explain a data flow model. 08
b) With suitable examples explain modularity functional independence & refinement. 07

Q.5 Write short notes on the following (any three): 15
1) Importance of s/w architecture.
2) Behavioral modeling.
3) Elements of the Analysis model.
4) Software project and challenges.

Section B

Q.6 Solve any five of the following: 10
a) What do you mean by agile development?
b) What is software project?
c) What is a metric in SQA?
d) Define extreme programming.
e) Describe management spectrum in software project planning.

f) What is the difference between quality control and quality assurance?
g) What do you mean by software project risk?
h) What is the role of estimation models in software engineering?

Q.7 a) Explain agility principles, what is the impact of human factors? 08
b) Explain extreme programming. What is XP process? 07

Q.8 a) Explain the process of software project planning. 08
b) Explain in detail software scope and feasibility. 07

Q.9 a) Explain how we can achieve 'software quality'. 08
b) Explain i) Six sigma for software engineering 07
ii) ISO 9000 Quality standards.

Q.10 Write short notes on the following. (any three): 15
1) Agile unified process (AUP).
2) COCOMO model.
3) RMMM plan.
4) SQA plan.

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-1397
FACULTY OF SCINECE AND TECHNOLOGY
T.Y. B.Tech.(CSE) (Sem-V)
Programming in Java
(Revised)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Q.1 & Q.6 are compulsory.
2. Attempt any other two questions from remaining questions of each section.

Section A

Q.1 Attempt any five of the following. 10

a) Write any four differences between C++ and Java.
b) What is Java virtual machine?
c) How interfaces are defined? Give example.
d) What are Java built- in packages? List those packages.
e) Compare method overloading and method overriding.
f) What is the purpose of 'super' keyword? Give example.
g) What is inheritance? Write all it's types.
h) Differentiate between errors and exceptions.

Q.2 a) Describe in brief features of Java. 08

b) What is constructor? Write the program for constructor overloading. 07

Q.3 a) Write the Java program for implementing multiple inheritance? 08

b) Discuss various access specifiers used for creating classes. In packages. 07

Q.4 a) Write a program using multiple catch blocks. 08

b) Draw and explain thread life cycle. 07

Q.5 a) Write short note on wrapper classes in Java. 07

b) What are command line arguments? Write a program in Java to demonstrate command line arguments. 08

Section –B

Q.6 Solve any five questions. 10

a) Why swing is called light weight component?
b) What is system err?
c) How to display checkboxes?
d) How to handle key event?
e) List JDBC drivers
f) Draw hierarchy of output stream class?
g) What is BufferedReader?

Q.7 a) Write a program for online test using swing component and display its score. 07

b) Explain Jmenu, Jmenu Item. Write a sample code to display menu bar. 08

Q.8 a) Describe life cycle of Applet. 07

b) Write a program to retrieve records from database using JDBC. 08

Q.9 a) Explain use of BufferedInputstream class? Write a sample code. 07

b) What is object serialization and deserialization? Write a sample code. 08

Q.10 a) Why do we need prepared statement? write a code to update record using JDBC. 07

b) Describe methods of mouse listener class. 08

Total No. of Printed Pages:3

SUBJECT CODE NO:- H-1404
FACULTY OF SCINECE AND TECHNOLOGY
T.Y.B.Tech.(CSE) (Sem-V)
Design Analysis and Algorithm
(Revised)

[Time: Three Hours] **[Max.Marks:80]**

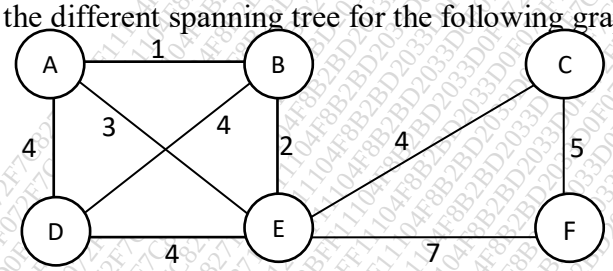
Please check whether you have got the right question paper.

N.B
1. Q.1 and Q.6 are compulsory.
2. Attempt any two questions from remaining questions in each section.

Section A

Q.1 Answer the following: 10

1) Define algorithm. What is algorithm validation?
2) Consider the polynomial $P(x) = a_0 + a_1x + a_2x^2 + a_3\,x^3$where $a_i! = 0$ for all i, the minimum number of multiplication needed to evaluate P on an input x is ----------
3) Write the control abstraction of divide and conquer method.
4) Solve optimal storage on tape for $n = 3$ $l_1, l_2, l_3 = (8,12,2)$
5) Find the different spanning tree for the following graph



Q.2
a) Write the program for bubble sort and analyze its performance. 07
b) What are various code tuning techniques? 08

Q.3
a) What is binary search? Write algorithm for it. How many elements from the following list require three comparisons -15, -8, 0, 7, 9, 23, 54, 82, 101 08

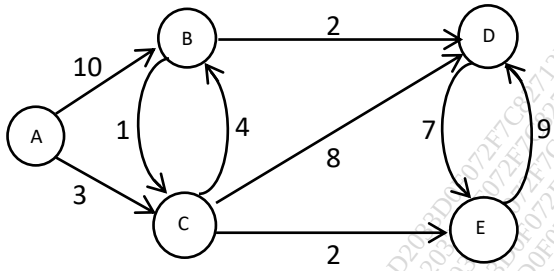
b) Compare straight maxmin and divide and conquer maxmin. 07

Q.4
a) Explain Knapsack problem. Write algorithm and solve the following example. 08
$n = 4\; w = 60 \quad P_1P_2P_3P_4 = 280, 100, 120, 120$
$w_1w_2w_3w_4 = 40, 10, 20, 24$

b) Explain quick sort with suitable example. 07

Q.5
a) Explain optimal storage on tape. 07

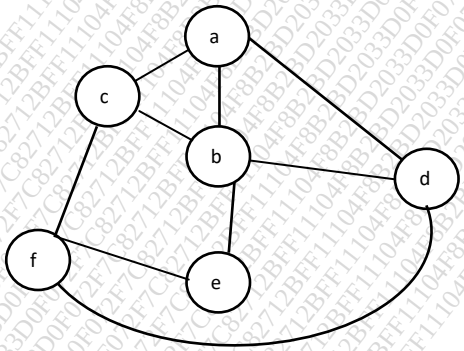
b) Explain single source shortest path problem. Find shortest path from A to other vertices. 08



Section B

Q.6 Answer the following: 10

1) Differentiate between greedy method and dynamic programming
2) What is the length of longest increasing subsequence for the given sequence?
   $\{-10, 24, -9, 35, -21, 55, -41, 76, 84\}$
3) Write optimal code for a +(b-c)
4) Identify DFS for the following graph.

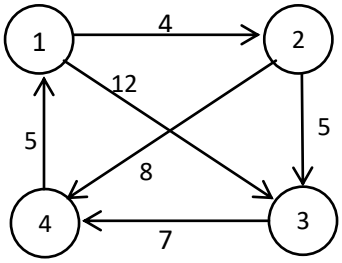


5) Which of the following is not backtracking
   i) Knight tour
   ii) N Queen problem
   iii) Tower of Hanoi
   iv) M-coloring

Q.7 a) Write short note on:- 08

i) Flow shop scheduling
ii) Reliability design

b) Find all pairs shortest path problem for following graph 07



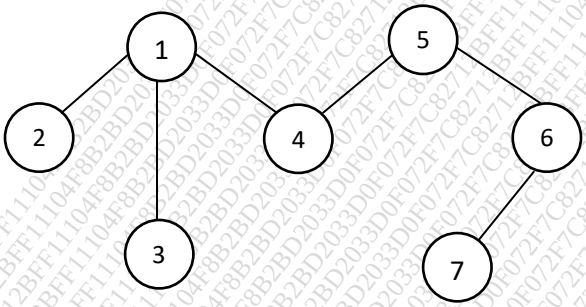
Q.8 a) How to find DFS and BFS spanning tree. Write the algorithm for DFS and BFS. 10

b) Define: 05

i) Articulation point

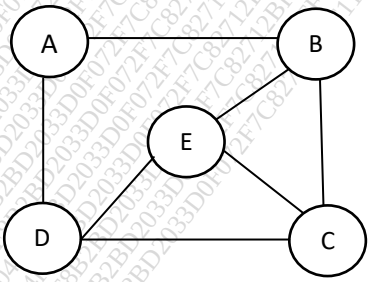
ii) Biconnected component

Identify the articulation points from the following graph



Q.9 a) Explain N-Queen problem with backtracking. 08

b) Explain graph coloring problem. Solve the following graph & identify the minimum number of colors required. 07



Q.10 a) Define: P-class, NP – class problem, NP hard and NP complete problem. 08

b) Write a short note on travelling salesperson problem. 07

Total No. of Printed Pages:03

SUBJECT CODE NO:- H-1411
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y. B.Tech.(CSE) (Sem-V)
Theory of Computation
(Revised)

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B 1) Q. No. 1 & Q.6 are compulsory.
2) Solve any two questions from remaining in each Section.

Section A

Q.1 Solve any five:- 10

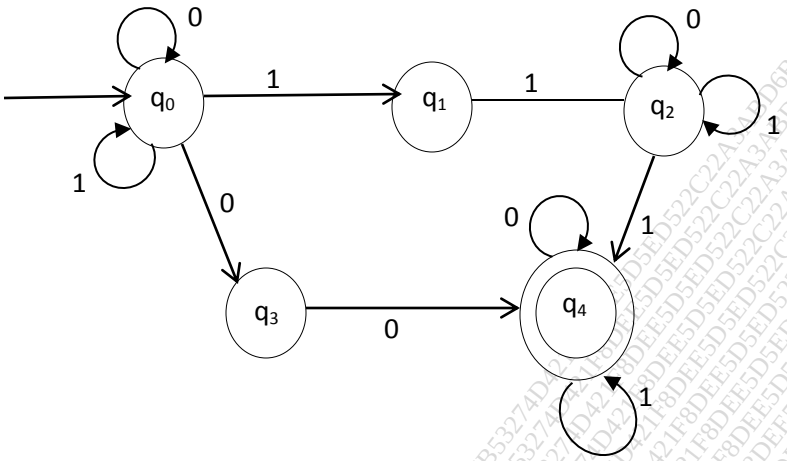
a) Define nondeterministic finite automata.
b) Enlist applications of finite automata.
c) If L(r)= Set of all strings over $\sum = \{0,1\}$ ending with '011', then find regular expression.
d) Define Regular expression.
e) Define unit production with an example.
f) Distinguish between type-0 & type-1 grammar.

Q.2 a) Construct a moore machine equivalent to the mealy machine M defined by table. 07

Present state	Next state			
	a=0		a=1	
	State	Output	State	Output
→ q_1	q_1	1	q_2	0
q_2	q_4	1	q_4	1
q_3	q_2	1	q_3	1
q_4	q_3	0	q_1	1

b) Construct a DFA that accepts the language represented by regular expression. 08
$(0 + 1)^*(00 + 11)$

Q.3 a) Construct a DFA equivalent to the NDFA described by following fig. 07



b) Show that 08
$L = \{0^i\ 1^i / i \geq 1\}$ is not regular using pumping lemma for regular language.

Q.4 a) Construct minimum state automata equivalent to FA given below. 08

State	a	b
q_0	q_1	q_2
q_1	q_4	q_3
q_2	q_4	q_3
q_3	q_5	q_6
q_4	q_7	q_6
q_5	q_3	q_6
q_6	q_6	q_6
q_7	q_4	q_6

b) Explain Chomsky classification of languages 07

Q.5 a) Consider the grammar G={(S,A),(0,1), P,S}, where P consists of 08
S $\rightarrow$ OAS/O
A $\rightarrow$ S1A/SS/10
Show that the left most derivation and rightmost derivation for the input string "001100". Also draw derivation tree.

b) What is Greibach Normal form? Convert the given grammar to GNF form 07
S $\longrightarrow$ ABA/AB/BA/AA/A/B
A $\longrightarrow$ aA/a
B $\longrightarrow$ bB/b

Section B

Q.6 Solve any five: 10

a) Define NPDA
b) What is the difference between top down parsing & bottom up parsing?
c) What is Turing machine?
d) What multitape turing machine?
e) Define an algorithm.
f) What do you mean by nonrecurssively enumerable languages?

Q.7 a) Construct PDA that accepts the following language 08
$L = \{a^n b^n / n \geq 0\}$

b) Design Turing machine that accepts. 07
$\{0^n 1^n / n \geq 1\}$

Q.8 a) Consider the Turing machine M described by the transition table given in following table. Describe the processing of 08
a) 001 b) 0011 Using ID's which of the above strings are accepted by M.
Refer table

Present state	Tape symbol				
	0	1	x	y	b
→ q_1	xRq_2	-	-	-	bRq_5
q_2	$0Rq_2$	yLq_3	-	yRq_2	-
q_3	$0Lq_4$	-	xRq_5	yLq_3	-
q_4	$0Lq_4$	-	xRq_1	-	-
q_5	-	-	-	yRq_5	bRq_6
q_6	-	-	-	-	-

b) Define PDA. What are different types of PDA? What are the applications of PDA? 07

Q.9 a) Explain model of Linear bounded Automata. 07

b) Explain different representations of Turing machine with an example. 08

Q.10 a) What is an algorithm? Explain decidable & undecidable language in detail. 07

b) Let $\sum = \{a, b, c, d\}$ write the Markov algorithm, which can remove first 'd' and every symbol which follows it in the given string from $\sum *$. 08

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-1426
FACULTY OF SCIENCE AND TECHNOLOGY
T.Y.B.Tech.(CSE) (Sem-V)
Elective-II System Software
[Revised]

[Time: Two Hours] **[Max.Marks: 40]**

Please check whether you have got the right question paper.

N.B 1) Question no. 1 and 5 are compulsory.
2) Attempt any two questions from remaining questions from each Section.

Section A

Q.1 Attempt any three 06

a) What is a device driver?
b) What is the significance of Loader and Linker?
c) What is a Macro?
d) State the features of interpreter.
e) State the difference between Lexemes and Tokens in compiler design.

Q.2 With a neat diagram explain the foundations of system programming. 07

OR

Explain typical Editor structure with an appropriate diagram.

Q.3 State and Explain the algorithms and data structures used in macro processor. 07

OR

What are some essential features in program debuggers? Give details.

Q.4 Compare System Software and Application Software. 07

OR

Explain any two types of loaders along with their advantages.

Section B

Q.5 Attempt any three. 06

a) Define software tool.
b) What is the significance of Symbol Table.
c) What is the input and output of Syntax analysis phase in compiler.
d) List the features of Machine independent and machine dependent assembler.
e) What are the fundamental functions in editing?

Q.6 With a neat diagram explain the different phases in Compiler design. 07

OR

Compare single pass and two pass assemblers.

Q.7 Discuss the facilities provided by debug monitors for dynamic debugging. 07

OR

Explain the translation of any two control structures in compiler design.

Q.8 Write a short note on Spectrum of software tools. 07

OR

Describe different Assembler directives in detail.

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-489
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE) (Sem-I)
Digital Image Processing
(Old)

[Time:Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Q.No.1 &Q.No.6 are compulsory.
2. Attempt any two questions from the remaining questionsineach section.
3. Assume suitable data if necessary.

Section A

Q.1 Solve any five 10

a) What is Image Negative
b) Define Hadamard transform.
c) Differentiate between low pass and high pass filters
d) Define image restoration process.
e) What is need for compression
f) Give expression for Euclidean and D4 distance measures
g) Define fidelitycriterion
h) Give the mask used for high-boost filtering.

Q.2 a) With neat diagram explain fundamental steps in digital image processing. 08

b) What is image histogram? Derive the histogram equalization 07

$$S_k = \sum_{j=0}^{k} Pr(rj)$$

Q.3 a) Explain image enhancement in frequency domain along with filter transfer function for each of the low pass filter. 08

b) Explain following image enhancement techniques 07
   a) Gray level slicing
   b) Bit-plane slicing

Q.4 a) With suitable example explain mode, median, max and min filters. Why they are called on order statistics filter? 08

b) Explain image compression model with neat block diagram. 07

Q.5 Write short note on (any three) 15

a) Run length coding
b) Binary image compression standards
c) Applications of digital image processing
d) Noise models

Section B

Q.6 Solve any five 10

a) What is mean by object point and back ground point?
b) Define hue and saturation
c) What is signature?
d) Write a mask of prewitt operator and Robert operator
e) How dilation produces thickening effect? Give example
f) Define image description
g) What is color complement?
h) Define brightness

Q.7 a) Explain the three types of discontinuities in digital images. 08

b) Define thresholding and explain the various methods of thresholding with suitable example. 07

Q.8 a) What do you understand by dilation, erosion, image opening and closing operation in morphological image processing? Explain with examples. 08

b) Explain different color models. 07

Q.9 a) Explain simple boundary and region descriptors. 08

b) What is image texture? What are different approaches to describe texture 07

Q.10 Write short note on (any three) 15

a) Color transformations
b) Applications of image segmentation
c) Chain code
d) Skeletonization

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-106
FACULTY OF SCINECE AND TECHNOLOGY
T.E. (CSE/IT) (Sem-II)
Advanced JAVA
[OLD]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Questions No.1 and 6 are compulsory
2. Attempt any two questions from each section
3. Figure right indicates full marks
4. Assume suitable data if necessary.

Section -A

Q.1 Attempt any five questions 10

i) Enlist different technologies of J2EE?
ii) What are Cookies?
iii) Differentiate session Vs. application Scope in JSP?
iv) Define Directive? Enlist JSP directives?
v) What is XMLHTTP?
vi) Enlist the methods of session tracking?
vii) Define deployment descriptor?
viii) Explain JSP scope?

Q.2 a) Explain the RMI architecture in details? 07

b) Write a program of SERVLET and JSP? 08

Q.3 a) Explain in details JSP life cycle? 07

b) What are JSP implicit object? Explain with suitable example? 08

Q.4 a) Explain servlet collaboration in details? 07

b) Explain in detail N- tier architecture? 08

Q.5 Design an online shopping application form using Servlet, JSP and JDBC? 15

Section – B

Q.6 Attempt any five questions 10

i) Enlist java mail protocol?
ii) Enlist the components of Hibernate?
iii) What is ORM?
iv) Define Struts Controller?
v) What is the use of UDDI?
vi) What is HQL?
vii) What are the features of JSF?
viii) What is MVC?

Q.7 a) Create a table. Write java bean and hibernate mapping file to show the mapping between database table and java bean? 08

b) Note on: steps to develop and deploy web services? 07

Q.8 a) Explain the architecture of Hibernate? 07

b) Explain the JSF request processing life cycle? 08

Q.9 a) Explain in details building blocks of Struts framework? 07

b) Write a program to sending email using java mail API? 08

Q.10 Write a note on (any three) 15

a) Session beans
b) Hibernate Transaction processing
c) Struts validator framework
d) UDDI

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-126
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (Sem-II)
Design & Analysis of Algorithms
[OLD]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B. i) **Q.No.1** from Section A and **Q.No.6** from Section B are compulsory.
ii) Attempt **any two** questions from the remaining questions in each sections.

SECTION– A

Q.1 Attempt any five: 10

(a) Write the recurrence relation for merge sort.
(b) Compare greedy method and dynamic programming method.
(c) Write any two characteristics of greedy algorithm.
(d) An algorithm requires zero or more input (T/F) justify.
(e) Explain space complexity.
(f) Define asymptotic notation.
(g) Explain job sequencing with deadline problem.
(h) Define minimum cost spanning tree.

Q.2 (a) Explain Huffman coding with suitable example. 07
(b) Explain job sequencing with deadline by taking suitable example. 08

Q.3 (a) Explain time complexity of binary search method in best, worst and average case for successful and unsuccessful search. 07
(b) Explain linear search method and compute its best, worst and average space complexity. 08

Q.4 (a) Find an optimal placement for 13 programs on three tapes T_0, T_1 and T_2 where the programs are of length 08
{12, 5, 8, 32, 7, 5, 18, 26, 4, 3, 11, 10, 06}
(b) What is performance analysis of an algorithm? How much does sequential search take to search a particular elements in 'n' distinct elements in best and worst case? Write pseudo code for it. 07

Q.5 (a) Sort the following elements using selection sort 07
44, 01, 50, 22, 60, 55, 77, 65.
(b) What is optimal merge pattern? Find optimal merge pattern for 10 files whose record lengths are 08
(28, 32, 12, 5, 84, 53, 91, 35, 3, 11)
Find total record movement and draw binary merge tree.

SECTION – B

Q.6 Attempt any Five: 10

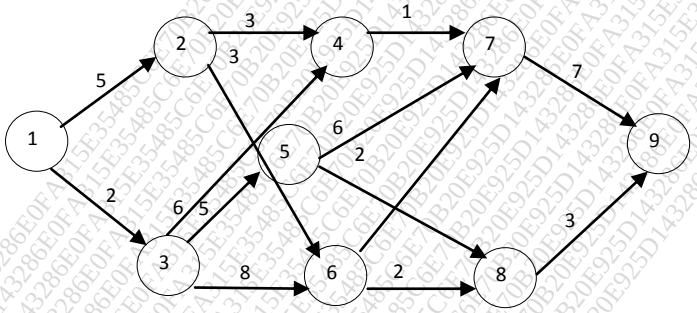
(a) Define multistage graph.
(b) What is Hamiltonian cycle?
(c) What are explicit and implicit constraints?
(d) Define principle of optimality.
(e) What are permutation and subset problem?
(f) Explain live, E and dead node.
(g) What is branch and bound method?
(h) Define Chromatic number of a graph.

Q.7 (a) Solve the following ISP using branch and bound for the given cost matrix 12

$$\begin{bmatrix} \infty & 10 & 15 & 20 \\ 5 & \infty & 9 & 10 \\ 6 & 13 & \infty & 12 \\ 8 & 8 & 9 & \infty \end{bmatrix}$$

(b) Define 15- puzzle problem. 03

Q.8 (a) Solve multistage graph problem using dynamic programming for the given graph 10



(b) Explain graph traversal technique 05

Q.9 (a) What is FIFO branch and bound solve 4-Queen's problem using this. 07
(b) Explain biconnected component of a graph with example. 08

Q.10 (a) Write an algorithm for all pairs shortest path algorithm 08
(b) Explain 15-puzzle problem and solve it using branch and bound. 07

H-161

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-161
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (Sem-II)
Computer Networks - II
[OLD]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B i) Q.No.1 and Q.No.6 are compulsory.
ii) Attempt any two questions from Q.No.2 to Q.No.5 and any two questions fromQ.No.7 to Q.No.10 in each section.

Section A

Q.1 Answer any five. 10
a) What is routing forwarding?
b) What is RSUP?
c) What is LAN emulation?
d) Explain priority queuing?
e) Explain alleviate congestion.
f) Differentiate between direct and indirect delivery.
g) What is BECN?

Q.2 a) Draw and explain AAC ¾. 07
b) Explain link state routing in detail. 08

Q.3 a) How to measure the performance of the network? 08
b) Explain dozed loop congestion control. 07

Q.4 a) Explain OSPF algorithm 07
b) Explain token bucket algorithm. 08

Q.5 Write short note (any three) 15
a) ATM LANs
b) Internetworking
c) Multicasting
d) Client server model

Section B

Q.6 Answer any five. 10
a) SNMP is which layer protocol?
b) What is node to node delivery?
c) What is min-max fairness in TCP?
d) What is half closure in TCP?
e) What is IANA?
f) Explain responsibilities of application server.
g) What is part address?

Q.7	a)	Explain the functions of network management system.	07
	b)	Explain connection establishment and connection relays in transport layer.	08
Q.8	a)	What is resolution with its different types?	07
	b)	Explain FTP with neat diagram.	08
Q.9	a)	Explain flow control, error control in TCP.	07
	b)	Compare SCTP & TCP.	08
Q.10	Write short note (any three)		15
	a)	H.323	
	b)	Dynamic DNS	
	c)	FQDN	
	d)	RTO	

Total No. of Printed Pages:3

SUBJECT CODE NO:- H-196
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (Sem-II)
Theory of Computation
[OLD]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

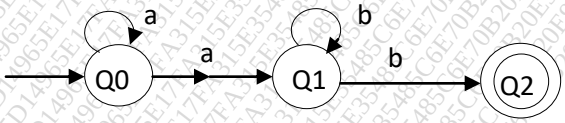
N.B i) Q. No.1 and Q. No.6 are compulsory.
ii) Attempt any two Questions from Q.No.2 to Q.No.5 and any two Questions from Q.No.7 to Q. No.10 of each section.
iii) Figures to the right indicate full marks.

Section A

Q.1 Attempt any five Questions from the following 10

a) Differentiate DFA & NFA w.r.t. transition function.
b) Find language represent by following Regular expression
(a+b) . (b+c)
c) Differentiate mealy and moore machine.
d) Give Regular expression over {0,1} such that,
$L(r) = \{W | W \in \sum^*$ has atleast one pair of consecutive 1's.
e) Give the restriction Rules of CNF and GNF.
f) Define derivation tree in CFG.
g) Explain meaning of Tuples used to define finite Automata.

Q.2 a) Design DFA that accept even numbers of a's and even numbers of b's over $\sum = \{a, b\}$ 08
b) Construct DFA Equivalent to given NFA 07



Q.3 a) Design mealy machine that replace occurrences of 121 by 212. 08
b) Construct the minimum state equivalent DFA for the DFA given by following transition table. 07

State	Input	
	0	1
→ Q1	Q2	Q3
Q2	Q3	Q5
* Q3	Q4	Q3
Q4	Q3	Q5
* Q5	Q2	Q5

Q.4 a) Construct∈ −NFA for given Regular expression 08

a) (1 + 0)
b) (0 + 1)*

b) Prove that the set $L = \{a^n | n \text{ is prime}\}$ is not regular 07

Q.5 a) Consider following grammar. Find leftmost and rightmost derivations for string "bbaaba" 08

S ⟶ aB | bA
A ⟶ a | aS| bAA
B ⟶ b |bS| aBB

b) Explain Chomsky classes of CFL. 07

SECTION – B

Q.6 Attempt any five Questions from following 10

a) Define null and unit productions.
b) What is ambiguous grammar
c) Determine whether the grammar G has a useless production?
S ⟶ A
A ⟶ aA|∈
B ⟶ bA
d) What is application of pumping lemma for CFG.
e) What is linear bounded Automata?
f) Explain the language of PDA
g) What is universal turing machine?

Q.7 a) Simplify the following grammar by removing ∈ productions. G=(N,T, P, S) and P has 07

S ⟶ aAB
S ⟶ bB
A ⟶ aB
A ⟶ ∈
B ⟶ bA
B ⟶ A
B ⟶ a

b) Convert following Grammar G with production P given by S ⟶ ABa, A ⟶ aab, 08
B ⟶ AC to Equivalent CNF.

Q.8 a) Show that $L = \{a^n b^n C^n | n \geq 1\}$ is not in CFL 07

b) Construct PDA accepting language $L = \{WW^R | W \in \{0,1\}^*\}$ 08

Q.9 a) Explain the Turing machine model and explain its representation by ID. 08

b) Design Turing machine to recognize all strings consisting of an even numbers of 1's. 07

Q.9	a)	Explain Formal definition of PDA and Acceptance of PDA.	07
	b)	Explain multitape and multitrack model of Tm. Give its Equivalent representation using single tape.	08

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-296
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (Sem-I)
Software Engineering
[OLD]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Q.no.1 from section A and Q.no.6 from section B are compulsory.
2. Attempt any two questions from remaining questions in each section.

Section A

Q.1 Solve any five 10

a) Enlist software myths.
b) Draw prototyping model.
c) Define requirement engineering process.
d) What is class diagram?
e) What is function point analysis?
f) Enlist user interface design golden rules.
g) Explain monitoring and control in coding?
h) List out software design principles.

Q.2 a) Explain waterfall model with diagram. 08

b) Explain decomposition techniques in detail. 07

Q.3 a) With neat diagram explain process frame work. 08

b) Explain the terms in Design process Abstraction pattern modularity. 07

Q.4 a) Explain programming style and internal documentation. 08

b) Explain cost estimation in detail 07

Q.5 Solve any three short notes: 15

a) CMM
b) QFD
c) Requirement engineering process
d) Verification process
e) Refinement and refactoring

Section – B

Q.6 Solve any five: 10

a) What is domain analysis?
b) Explain OOA.
c) Explain project management.
d) Define risk management.
e) Define OOA and OOP.
f) What is test case?
g) Enlist software tasting principles.
h) What is sequence diagram?

Q.7 a) Explain OOD in detail. 08

b) Explain web engineering team. 07

Q.8 a) Explain WebApp Engineering layers. 08

b) Explain software testing strategy by giving suitable example. 07

Q.9 a) What is Agile planning? Explain it. 08

b) Draw class diagram & sequence diagram with example. 07

Q.10 Solve any three short notes: 15

a) CRC cards.
b) Behavior analysis.
c) Web Engineering.
d) Scenario based testing.
e) Unit testing.

H-317

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-317
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (Sem-I)
Database Management System
[OLD]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B.: 1) Q. No. 1 from Section A and Q. No.6 from Section B are compulsory.
2) Solve any two questions from remaining from Section A and Section B from each.
3) Assume suitable data.

Section A

Q.1 Attempt any five questions:- 10

1) What is distributed and client server architecture in DBMS.
2) List out major components of DBMS environment.
3) Define primary key with example.
4) What is mean by strong entity.
5) What is an attribute and domain in relational data model.
6) Define derived attribute with example.
7) What is relationship? Explain types.
8) What do you understand by the term data abstraction?

Q.2 a) Explain the role of different levels of data abstraction in detail. 07
b) Discuss the entity integrity and referential integrity constraints? Why is each considered important . 08

Q.3 a) What is a relational database schema? Discuss the properties of relation. 08
b) What do you mean by data model? Explain relational model in detail. 07

Q.4 a) Explain different types of database system users in detail. 07
b) Construct the ER Diagram for keeping track of the exploits of your favourite sports team. You should store the matches played, the scores in each match, the players in each match, and individual players statistics for each match. 08

Q.5 a) Explain in detail the role of data administrator. 08
b) Define and Differentiate between physical and logical data independence. 07

Section B

Q.6 Attempt any five questions. 10

1) What is transaction?
2) What is Second Normal Form?
3) What is Join Dependency in Normalization?

4) Define views in SQL.
5) List out different types of DDL Commands.
6) Define serial schedule and non-serial schedule.
7) Define share and exclusive lock.
8) What is mean by ACID properties in transaction management?

Q.7 a) What is Fourth Normal form? Explain why it is more desirable than BCNF. 08

b) What is normalization? Explain First normal Form with an example. 07

Q.8 a) Consider the following relational schema of banking example. 08

branch(branch_name, branch_city, assets)
customer (customer_name, customer_city, customer_street)
account(account_number, Branch_name, balance)
loan(loan_number, branch_name, amount)
depositor(customer_name, account_number)
borrower(customer_name, loan_no)
Write following Queries using relational algebra?

i) Find the names of all customers who have a loan, an account, or both.
ii) Find the names of customer who have loan at bank and the loan amount.
iii) Find all customers who have an account from atleast downtown and uptown branches.
iv) Find all loans of over Rs. 1200.

b) Explain left outer Join, right outer Join and Full outer Join with example. 07

Q.9 a) Consider the following relation. 08

Instructor (ID,name, dept_name,salary)
Department(dept_name, building, budget)
Classroom(building, roomno, capacity)
Teaches(ID,course_id,sec_id,semester)
Course(course_id,title,dept_name,credit)
Student(ID,name,dept_name,tot_credit)
Takes(ID,course_id,sec_id,semester, year,grade)
Write down Queries express in SQL.

i) Find all courses taught in the both Fall 1998 and spring 1999 semester.
ii) Find average salary in each department.
iii) Find the names of instructor of mechanical and civil department.
iv) Find only those department where average salary of instructor is more than Rs.12,000.

b) Explain Aggregate Function in SQL. 07

Q.10 a) What is backup recovery? Explain database recovery technique. 07

b) What is deadlock? Explain deadlock prevention technique. 08

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-386
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (Sem-I)
Programming in Java
[OLD]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B.: i) Question No.1 and 6 are compulsory.
ii) Attempt any two questions from each section.
iii) Figures right indicates full marks.
iv) Assume suitable data if necessary.

SECTION– A

Q.1 Attempt any five questions: 10

i) What is byte code? Where it is used?
ii) Write a short note on static keyword.
iii) Write a simple java code to demonstrate the use of vector.
iv) Differentiate between Array and Vectors.
v) Why multiple interface in not used in Java?
vi) Define exception & explain its types of exception.
vii) Draw & explain exception hierarchy.
viii) Explain different ways to use thread class.

Q.2 a) What is thread? How it is related to operating system process explain in detail. 07
b) What is a wrapper class? Write a java code to demonstrate the use of wrapper classes. 08

Q.3 a) Differentiate between user defined & system packages. Write down the steps to create simple user defined package with sample code. 07
b) Explain java Interface with suitable java code. 08

Q.4 a) Write a java code to take input from file & display output in another file. 08
b) Write a short note on: i) Synchronization ii) Wrapper Class iii) Finally iv) Thread exception. 07

Q.5 a) What is string class? Explain functions of string class? 07
b) Write a java code for command line Arguments. 08

SECTION – B

Q.6 Attempt any five questions: 10

i) What is difference between byte stream & character stream?
ii) Differentiate between AWT and Swing.
iii) Explain filter & pipe streams.
iv) What is port? Give list of popular ports in system.
v) List four JDBC drivers.
vi) List types of action listeners.

vii) Write a short note on heavy weight components & light weight components.

viii) Write a java code to display human face using applet.

Q.7 a) What is applet? Explain life cycle in detail. 08

b) Create a registration form for students using swing components (assume suitable data). 07

Q.8 a) Write a java code to demonstrate client & server concept. 07

b) Explain with suitable example, how to create & execute static & dynamic SQL statements. 08

Q.9 a) Write a java code to demonstrate the use of action listener classes. 07

b) Write down the steps to create & use applet with html tags with suitable example. 08

Q.10 a) Write a short note: i) Local & Remote applet ii) Result set iii) Object serialization iv) Socket. 08

b) Write a java code to display information of students in library system using database concept. (Assume suitable data for employee). 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-421
FACULTY OF SCIENCE & TECHNOLOGY
T.E. (CSE/IT) (Sem-I)
Operating system
[OLD]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Q.no.1 from section A & Q.no.6 from section B are compulsory
2. Solve any two questions from each section from the remaining questions
3. Assume suitable data if necessary.

Section – A

Q.1 Solve any five : 10

a) What are the advantage and disadvantage of multiprocessor system?
b) Explain smart Card O.S.
c) Explain the term 1. Mutual Exclusion 2. Critical Section
d) State dinning philosopher problem .
e) Differentiate between program and process.
f) List file organization methods.
g) What is the difference between file and database ?

Q.2 a) Explain OS as resources manager 07
b) Explain the terms. 08
I) Monolithic ii) Microkernel

Q.3 a) What are different process states? Illustrate and describe process state transition 07
b) Explain semaphore in detail. 08

Q.4 a) Consider following set of processes with single processor 08

Process	Burst time	Arrival Time
P1	8	0
P2	4	1
P3	9	2
P4	5	3

I) Find Average waiting time (AWT) for pre-emptive SJF.
II) Find AWT for non-pre-emptive SJF .

b) Explain user level thread & kernel level Thread . 07

Q.5 a) Explain file system implementation using linked list with index and i-node in detail. 08
b) What is directory? Explain directory operation in details. 07

Section – B

Q.6 Solve any five: 10

a) What is Swapping?
b) What are the memory management requirements?
c) What is compaction?
d) List Goals of I/O software
e) What are Device drivers?
f) What is deadlock?
g) Explain resource allocation graph

Q.7 a) Consider the following page reference string 08
7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1
How many page faults would occur for the following replacement algorithms, assuming 3 frames?
I) FIFO replacement
II) Optimal replacement

b) What is paging? Discuss basic paging technique in details . 07

Q.8 a) Explain RAID in detail. 08

b) Discuss the following related to disk space management 07
I) Block size II) Keeping track of free blocks

Q.9 a) Briefly explain security features of WINDOWS-7 07

b) Consider the following snapshot 08

	Allocation	max	Available
	ABC	ABC	ABC
P0	010	753	332
P1	200	322	
P2	302	902	
P3	211	222	
P4	002	433	

Answer the following questions using banker's algorithm:
a) What are contents of matrix need?
b) Is the system in safe state?
c) If request for process p1 arrives for (330). Can the request be granted immediately?

Q.10 a) Explain various methods for recovery from deadlock 07

b) What is segmentation? Explain the basic segmentation method. 08

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-523
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (Sem-I)
Operating Systems
[Revised]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B.:
- Solve 3questions from each section.
- Question no. 1 from Section A and Question no. 6 from section B, are compulsory.
- From the remaining questions A and B, solve any two questions.

Section– A

Q.1 A) What is the purpose of interrupts? What are the differences between a trap and an interrupt? 05

B) Differentiate between program and a process. Explain PCB. 05

Q.2 A) Define the essential properties of the following types of operating systems: Batch, Time sharing, Real time, Distributed. 07

B) Explain following operating system concepts: Address Spaces, Files, The Shell,Virtual Memory. 08

Q.3 A) Explain different system calls for file management. 07

B) Explain user level and kernel level threads with examples. 08

Q.4 A) Explain how the file system is implemented and managed. 07

B) Explain how files are structured and named in operating system design. 08

Q.5 A) Differentiate between process and thread. 07

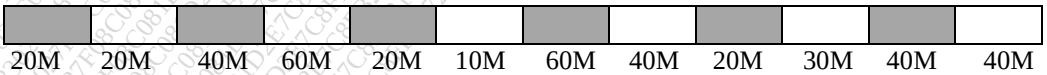
B) Explain how the file system is implemented and managed using linked-list allocation. 08

Section – B

Q.6 A) What is paging? Discuss basic paging technique in detail. 05

B) What are device drivers, explain it in detail? 05

Q.7 A) A dynamic partitioning scheme is being used and the following is the memory configuration at a given point in time: 07



The shaded areas are allocated blocks; The white areas are free blocks. The next 3 memory requests are for 40M, 20M and 10M. Indicate the starting address for each of the three blocks using the following placement algorithms:
First fit, best fit and next fit. Assume the most recently added block is at the beginning of memory.

B) What are the most common techniques used for structuring the page table? Explain hierarchical paging in detail. 08

Q.8 A) Explain how I/O can be performed using Programmed I/O. 07

B) Explain Goals of the I/O software in detail. 08

Q.9 A) A system has 3 types as resources R1, R2, R3, their number of units are 3,2 and 2 respectively. Four processor P1, P2, P3, P4 are currently connecting for resources in the following manner: 07

a) P1 is holding one unit of R1 and is requesting for one unit of R2.

b) P2 is holding two units of R2 and requesting for one unit each of R1 & R3.

c) P3 is holding one unit of R1 & is requesting one unit of R2.

d) P4 is holding two units of R3 & is requesting for one unit of R1.

Determine which, if any, of the processes are deadlocked in this state.

B) Explain Hierarchical paging technique for structuring the page table. 08

Q.10 Write short notes on:

A) Deadlock prevention 05

B) Disk scheduling algorithm 05

C) Buddy system 05

Total No. of Printed Pages:03

SUBJECT CODE NO:- H-530
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (Sem-I)
Theory Of Computation
[Revised]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B.: 1) Q. No. 1 and Q. No. 6 are compulsory.
2) Attempt any two questions from Q. No. 2 to Q. No. 5 and from Q. No. 7 to Q. No. 10 of each section.
3) Figures to the right indicate full marks.

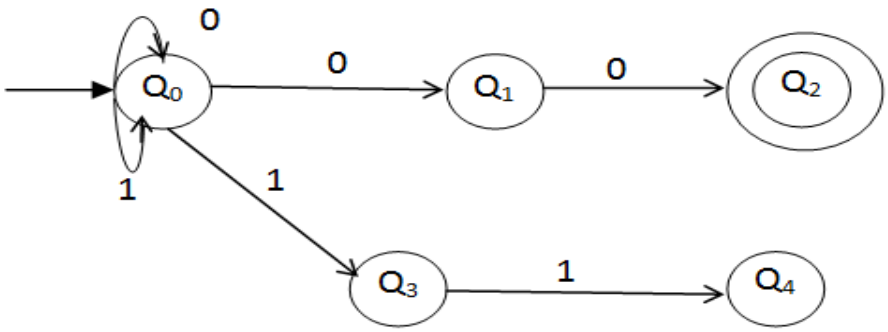
Section A

Q.1 Attempt any five question from following: 10

a) Give formal definition of finite automata with 5- tuples.
b) When ∈ closure is required? Give example.
c) Draw NFA with ∈ closure for given regular expression$(a+b)^*$
d) Define mealy and moore machines.
e) Represent set of all words over $\sum = \{a, b\}$ containing at least one 'a' usign Regular expression.
f) Differentiate DFA and NFA.
g) Define ambiuous grammar with an example.
h) Define unit and Null production in CFG.

Q.2 a) Design a DFA that reads strings over$\sum = \{0,1\}$, and accept only those strings which ends up in either "00" or "11". 08

b) Determine the equivalent DFA for given NFA below. 07



Q.3 a) Minimize following DFA 08

Current State	Input	
	a	b
$\rightarrow Q_0$	Q_5	Q_1
$*Q_2$	Q_2	Q_6
Q_4	Q_5	Q_7
Q_5	Q_6	Q_2
Q_6	Q_4	Q_6
Q_7	Q_2	Q_6
Q_3	Q_6	Q_2

b) Design mealy machine to reads strings over $\sum = \{0,1\}$, if the input – ends in "101" output should be 'X' , if the input ends in "110" outputs should be 'Y' otherwise output should be 'Z' 07

Q.4 a) Construct DFA for the given regular expression. 08

$$10 + (0 + 11)0^*1$$

b) Prove that the following language is non-regular using pumping lemma. 07

$$\{a^n b^{n+1} | n > 0\}$$

Q.5 a) Consider the following grammar 08

$$S \rightarrow aB|bA$$
$$A \rightarrow a|aS|bAA$$
$$B \rightarrow b|bS|aBB$$

Find the leftmost and right most derivation for the string "bbaaba".

b) Consider following grammar and convert it into CNF form.

$$S \rightarrow aSa|bSb|aa|bb|a|b$$ 07

Section B

Q.6 Attempt any five questions from following 10

a) What is language of LBA?
b) Define Instantaneous Description for TM.
c) Define decidable and undecidable problem.
d) Define CNF and GNF.
e) Define class P and class NP.
f) Define Recursive language and Recursively enumerable language.
g) Explain the components of PDA with neat diagram.
h) Define universal T.M.

Q.7 a) Explain any two variants of T.M in detail. 08

b) Design TM to increment the value of any binary number by one. The output also be binary number with value one more than the given number. 07

Q.8 a) Design PDA that checks the well-formedness of parenthesis. 08

b) Convert following CFG into PDA 07

$$S \rightarrow aA|aB$$
$$A \rightarrow aA|aB$$
$$B \rightarrow bB|b$$

Q.9 a) Prove that $L = \{a^n b^n c^n | n > 1\}$ is not context free. 08

b) Explain Halting problem of TM. 07

Q.10 a) Explain post correspondence problem and show that following Domino is unsolvable 08

	A	B
1	ba	bab
2	abb	bb
3	bab	abb

b) Explain TM with neat diagram & Instantaneous description of TM. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-537
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (CGPA) (Sem-I)
Database Management System
[Revised]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B.: i) Question No.1 from Section A and Q.No.6 from Section B are compulsory.
ii) Solve any two question from remaining from Section A and Section B from each.
iii) Assume suitable Data.

Section– A

Q.1 Attempt any Five Questions: 10
i) Define Domain and tuple.
ii) What is relational database Model?
iii) Define candidate key with example.
iv) What is mean by entity set?
v) What is total participation constraints?
vi) List out types of end users in DBMS.
vii) Role of database administrator.
viii) What is Ternary relationship?

Q.2 a) What is data model? Explain any two Data model with example. 08
b) Explain advantages and disadvantages of DBMS. 07

Q.3 a) Explain centralized and client / server architectures of DBMS. 07
b) Construct ER Diagram for Internet shop. 08
-identify attribute, entities and relations.
-identify primary key and foreign key.
-Specify constraints.

Q.4 a) Explain Aggregation with suitable example. 07
b) Describe strong and weak entities with suitable example. 08

Q.5 a) Explain an entity integrity. Referential integrity and foreign key with an example. 08
b) Explain characteristics of relations with example. 07

Section – B

Q.6 Attempt any five questions: 10
i) Define second normal form.
ii) What is Join dependency?
iii) What is normalization?
iv) List out different set operations in Relational algebra.
v) List out aggregate Function in SQL.
vi) List out transaction state.
vii) What is view serializability?
viii) What is shared and exclusive mode in lock-based protocol?

Q.7	a)	Explain Third Normal Form with Example.	07
	b)	Explain Fourth Normal Form with example.	08
Q.8	a)	Explain Left outer Join, Right outer Join and Full outer Join with Suitable Example.	07
	b)	Consider the following schema: Employee(person_name, Street, city) Works (person_name, company_name, salary) Company (Company_name, City) Manages(person_name, manager_name) Write following queries using Relational Algebra? i) Find the names of all employee who work for Syntel. ii) Find the names of all employees who live in the same city as the company for which they work. iii) Find the names of person whose salary is greater than Rs.36,000. iv) Find the names of Company located in Aurangabad City.	08
Q.9	a)	Explain "group by" and "order by" clause in SQL with suitable Example.	07
	b)	What is transaction? Explain ACID properties of transaction.	08
Q.10	a)	What is concurrency control? Explain lock-based protocol with example.	08
	b)	What is deadlock? Explain time stamp based methods with example.	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-544
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (CGPA) (Sem-I)
Programming in Java
[Revised]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B.:i) Question No.1 and Question No.6 are compulsory.
ii) Attempt any two questions from each section.
iii) Figures right indicates full marks.
iv) Assume suitable data if necessary.

SECTION A

Q.1 Attempt any five questions 10

i) Define Interface?
ii) Differentiate between errors and exceptions?
iii) What is byte code?
iv) What are the types of packages in java?
v) How to convert primitive types to object types?
vi) List the various methods of thread class?
vii) Which class is a super class of every class? Which package is imported by default in every java program?
viii) In System.out.println() what is the meaning of System, out, println()?

Q.2 a) Differentiate between method overloading and method overriding? 07
b) What is multiple inheritance? Write a program for multiple inheritance using interface? 08

Q.3 a) Define exception? Write java code to handle any three inbuilt exceptions? 07
b) What are various system packages in java? Discuss about how to create user defined package and add class to user defined package? 08

Q.4 a) What is thread? Explain the thread life cycle? 07
b) Write a java program to define class, describe its constructor, overload the constructor and instantiate its object? 08

Q.5 Write a note on (any three): 15

a) Final keyword
b) Throw and throws
c) Vectors
d) Thread synchronization

SECTION B

Q.6 Attempt any five questions 10

i) List the types of JDBC drivers?
ii) What is socket?
iii) What is object serialization?
iv) List the methods of Applet?
v) What is the use of Resulset?
vi) Differentiate between byte stream and character stream?
vii) Explain the syntax of APPLET tag?
viii) What are the various network protocols?

Q.7 a) Write a java program to save the employee details in database (emp_id, emp_name, emp_dept, emp_salary) 08

b) Write a program to read a number and display its square using AWT and event handling? 07

Q.8 a) Explain the applet life cycle with neat diagram? 07

b) What is event handling? Discuss in detail? 08

Q.9 a) Write a program to copy the content of a file to another file? 07

b) How to pass parameter to applet? Discuss with suitable programming example? 08

Q.10 Write a note on (any three): 15

a) Inputstream and outputstream
b) Serversocket
c) Statement Vs. PreparedStatement
d) Adaptor classes

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-553
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (CGPA)(Sem-I)
Elective – I Computer Network Architecture And Protocols
[Revised]

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B.:i) Q. No.1 from section A & Q.6 from Section B. 10 marks each, will be compulsory.
ii) From the remaining Questions in Section A & B, solve any two Questions 15 marks each.

Section– A

Q.1 Attempt any Five Questions:- 10
a) What is area in an Autonomous System?
b) Which are the unicast Routing Protocols?
c) List out the network layer design issues & Explain any one.
d) Difference between classful & classless Addressing.
e) What is UDP?
f) What is flow control?
g) What is RIP?

Q.2 a) Explain in detail Distance – Vector Routing Algorithm. 07
b) What is NAT, Explain its operations in detail. 08

Q.3 a) With a neat Diagram, Explain the process of RIP in detail. 07
b) What is SCTP? Explain the process of Four-Way Handshaking in detail. 08

Q.4 a) What is UDP? Explain its services & applications in detail. 07
b) Explain Path-Vector Routing in detail 08

Q.5 Write Short Notes on :- (Any three) 15
a) BGP
b) DHCP
c) Flow Control at Transport Layer
d) EIGRP

Section – B

Q.6 Attempt any Five Questions:- 10
a) What is remote logging?
b) What is MIB?
c) What is AAL 3/4?
d) What are BSS & ESS?
e) Difference between DCF & PCF.
f) List out the parameters used in QoS in ATM Network and Explain any one.
g) What are SNMP, PDU's ? List them out.

Q.7 a) With a neat diagram, Explain ATM layers in detail. 07
b) What is ATM? Explain ATM LAN architecture in detail. 08

Q.8	a)	What are the location Awareness Strategies in Wireless Networks? Explain them in detail.	07
	b)	What is IEEE 802.11? Explain its MAC sublayers in detail.	08
Q.9	a)	What is TELNET? Explain the role of NVT in it.	07
	b)	Explain RTP in detail.	08
Q.10	Write Short Notes on : - (Any three)		15
	a)	CSMA/CA	
	b)	LAN Emulation	
	c)	SSH	
	d)	VOIP	

Total No. of Printed Pages:3

SUBJECT CODE NO:- H-554
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (CGPA) (Sem-I)
Elective – I Digital Image Processing
(Revised)

[Time : Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Q.No.1 &Q.No.6 are compulsory.
2. Attempt any two questions from the remaining question from each section.
3. Assume suitable data if necessary.

Section A

Q.1 Solve any five 10

a) Differentiate between continuous and digital image
b) Find the number of bits required to store a 256×256 image of 32 gray levels (i.e. A 5-bit image)
c) Define sampling and quantization
d) Explain the purpose of image enhancement
e) Define first order gradient derivative operator
f) What is purpose of image averaging?
g) What is entropy?
h) Define coding redundancy?

Q.2
a) With neat block diagram explain the fundamental steps involved in digital image processing. 08
b) Describe the process of image sensing and acquisition. 07

Q.3
a) Explain the different order statics smoothing filters with suitable example. 08
b) Explain the basic steps involved in frequency domain filtering. 07

Q.4
a) Calculate the efficiency of Huffman code for following symbol whose probability of occurrence is given below 08

Symbol	Probability
a_0	0.9
a_1	0.06
a_2	0.02
a_3	0.02

b) With the help of a block diagram. Explain image compression model. 07

Q.5 Write short note on (any three) 15

a) Gray level slicing
b) Run length coding
c) MSE & PSNR
d) Distance measures

Section B

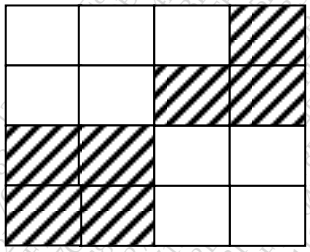
Q.6 Solve any five 10

a) Define image segmentation
b) What is edge?
c) Write a mask of sobel operator
d) What are the major effects in the erosion process?
e) What is color complement?
f) What is morphological image processing?
g) What is hue and saturation?
h) Define patterns

Q.7 a) Design compass gradient operator of size 3×3 to measure gradient of edge oriented in eight direction E, NE, N, NW, W, SW, S and SE. Give the form of these eight operators using coefficient value 0,1 or -1. Specify the gradient direction of each mask. 08

b) Elaborate region growing method for image segmentation. How it differ from thresholding. 07

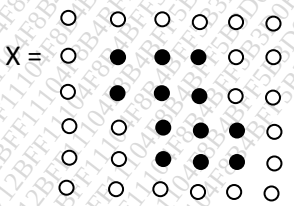
Q.8 a) Apply split and merge technique to segment the image below, also represent quad tree representation of the segment. 08

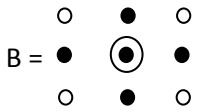


b) Discuss basic morphological algorithm for region filling with suitable example. 07

Q.9 a) Explain dilation process with example. 05

b) A binary image 'X' and structuring element 'B' are given below. 10





Calculate

1) X^c
2) $Y_1 = X \oplus B$
3) $Y_2 = X^c \ominus B$

4) $Y_3 = X \ominus B$
5) $Y_4 = X^C \oplus B$

Q.10 Write short note on (any three) 15

a) Hit or miss transformation
b) Regional descriptors
c) Skelectonization
d) Recognition based on decision theoretic methods

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-555
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (CGPA)(Sem-I)
Elective -I Embedded System
(Revised)

[Time:Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B i) Q.No.1 and Q.No.6 are compulsory.
ii) Solve any two questions from remaining from each section.

Section A

Q.1 Solve any 2 questions from following. 10
a) Compare RISC and CISC architecture.
b) State features of Arduino uno & Raspberry Pi.
c) Explain Assembly language Vs. Embedded C.

Q.2 a) Explain communication protocols in detail. 07
b) Discuss in detail design metrics and optimization of various parameters of Embedded system. 08

Q.3 a) Explain architecture of 8-bit 8051 microcontroller. 08
b) Explain bus architecture of ARM7. 07

Q.4 a) Explain following I/O devices with respect to Embedded system. 08
1) ADC
2) Keypad
b) Explain SPT communication protocol in detail. 07

Q.5 Solve any 3 from following. 15
a) Write short note on CPSR & SPSR
b) Serial communication vs parallel communication
c) State features of 8051 and ARM7
d) Write short note on I2C protocol

Section B

Q.6 Solve any 2 questions from following. 10
a) Explain TCP/IP networking.
b) Explain features of µcos-II.
c) Enlist in detail RTOS services in contrast with traditional OS.

Q.7 a) Explain in detail RTOS kernel architecture. 08
b) Explain memory management in RTOS. 07

Q.8 a) Explain different types of file system in Linux. 08
b) Explain in detail Linux Kernel. 07

Q.9 a) Explain Inter-task communication in µcos-II. 08
b) Discuss in detail the following with respect to RTOS. 07
1. Message Queues
2. Mailbox

Q.10 Write short notes on. (any 3) 15
a) Semaphore in RTOS
b) Interrupt Service Routine (ISR)
c) Synchronization in µcos-II
d) Task & task states in RTOS

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-566
FACULTY OF SCIENCE & TECHNOLOGY
T.E. (CSE/IT) (Rev) (Sem-II)
Advanced Java

[Time: Three Hours] **[Max. Marks:80]**

Please check whether you have got the right question paper.

N.B.: i) Q. No.01 and Q.No.06 are compulsory.
ii) Solve any two questions from the remaining in each section.
iii) Assume suitable data if necessary.

SECTION – A

Q.1 Attempt any five questions. 10
(i) Define JSP elements: Scripting, Expression, Comment.
(ii) What is XML HTTP Request.
(iii) What is Servlet
(iv) Enlist the features of Java 2EE8
(v) What is RMI
(vi) Differentiate servlet config Vs. Servlet cotext.
(vii) Enlist JSP scope

Q.2 Write a simple application using Servlet, JSP and Database. 15

Q.3 a) Explain session trucking using Http Session. 07
b) What is JSP? Explain JSP lifecycle in detail. 08

Q.4 a) What is JSP Directives? With example explain page & Include directive. 08
b) Discuss J2EE 1 tier, 2 tier and N tier architecture. 07

Q.5 Write a note on (any three) 15
a) Building Java projects with maven
b) AJAX
c) JSP Exception Handling
d) JSP Implicit objects.

SECTION – B

Q.6 Attempt any five questions. 10
i) What is HQL.
ii) What are the advantages of spring framework.
iii) Explain SOAP web service.
iv) Explain entity bean.
v) What is MVC.
vi) Enlist the modules of spring framework
vii) What is the use of SOAP in SOA.
viii) What is OFM.

Q.7	a)	Explain in detail Hibernate architecture.	07
	b)	Explain the different types of EJB.	08
Q.8	a)	What are the different types of dependency rejection? Explain in detail.	07
	b)	With suitable example, explain O/R mapping.	08
Q.9	a)	Explain the spring architecture in detail.	07
	b)	What is web service? Explain the components of web service.	08
Q.10	Write a note on (any three)		15
	a)	TMSk	
	b)	Spring web MVC framework	
	c)	JAX-RS2.0	
	d)	Spring core container	

Total No. of Printed Pages:02

SUBJECT CODE NO:- H-573
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (CGPA) (Sem-II)
Software Engineering
[Revised]

[Time: Three Hours] **[Max.Marks: 80]**

Please check whether you have got the right question paper.

N.B
1. Q.no.1 and Q.no.6 are compulsory.
2. Attempt any two questions from the remaining from each section.
3. Assume suitable data if necessary

Section A

Q.1 Answer the following (any five) 10
a) What are the best software engineering techniques and methods?
b) What is process framework?
c) List out various applications of S/W.
d) Explain prototyping model.
e) Justify the statement "S/W doesn't wear out".
f) List principles that guide software Engg. practice
g) List metrics for specifying nonfunctional requirements.

Q.2 a) Explain essential characteristics of socio-Technical systems. 08
b) What are key challenges facing software Engg? 07

Q.3 a) With neat sketch. Explain the waterfall model. 08
b) Explain classical life cycle of software. 07

Q.4 a) Differentiate between prescriptive and evolutionary process models. Explain. 08
b) How to validate software engineering requirements. 07

Q.5 a) List types of nonfunctional requirement and explain 07
b) Draw use case diagram for library management system and explain. 08

Section B

Q.6 Answer the following (any five) 10
a) Explain flow models
b) Explain the object oriented design process
c) Explain user interface design
d) Explain Art of debugging
e) Define testing tactics
f) Define validation
g) List components of improvement process.

Q.7	a)	Describe various kinds of relationship among classes.	08
	b)	Explain elements of requirements analysis.	07
Q.8	a)	Explain behavioral models with suitable example	08
	b)	With an example explain about DFD.	07
Q.9	a)	Explain design quality and design model in detail.	08
	b)	Explain strategies issues for conventional and object oriented software.	07
Q.10	a)	Explain seven principles of risk management	08
	b)	Explain COCOMO model in detail.	07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-580
FACULTY OF SCIENCE AND TECHNOLOGY
T.E. (CSE/IT) (CGPA) (Sem-II)
Design and Analysis Of Algorithms
[Revised]

[Time: Three Hours] **[Max. Marks:80]**

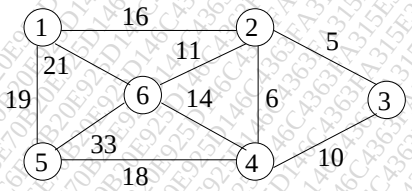
Please check whether you have got the right question paper.

N.B.: i) Q.1 & Q.6 are compulsory.
ii) Solve any two questions from the remaining each section.

Section – A

Q.1 Solve any five questions: 10
a) Define feasible & optimal solution.
b) Define space & time complexity.
c) Write recursive function to find sum of 'n' numbers.
d) State any two differences between divide & conquer and greedy method.
e) Define divide & conquer algorithmic design method.
f) Define frequency count & state its importance in analysis of algorithm.

Q.2 a) Compute minimum cost spanning tree for the following graph using Kruskal's Algorithm. 09



b) Write an algorithm to find smallest & largest number in an array using divide & conquer. 06

Q.3 a) Explain job sequencing with deadlines with example. 07
b) Perform analysis of bubble sort technique for best, worst & average case. 08

Q.4 a) Explain asymptotic notations with example. 07
b) Write merge sort algorithm using divide & conquer. 08

Q.5 a) Explain binary search method. Taking list of elements calculate time complexity for successful & unsuccessful search. 08
b) Explain Huffman coding with example. 07

Section – B

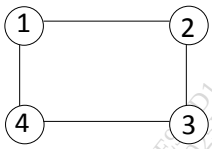
Q.6 Solve any five questions: 10
a) Define chromatic number of graph.
b) Define multistage graph.
c) State any two differences between dynamic programming & back tracking.
d) What is travelling sales person problem?
e) What is Hamiltonian cycle?
f) Explain implicit & explicit constraints of back tracking.

Q.7 a) Solve 15 puzzle problem using branch & bound Initial arrangement is: 09

$$\begin{bmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & & 8 \\ 9 & 10 & 7 & 11 \\ 13 & 14 & 15 & 12 \end{bmatrix}$$

b) Explain connected & bi-connected components with example. 06

Q.8 a) Explain graph coloring problem using back tracking. Color the given graph using 3 colors 08



b) Write algorithm for all pairs shortest path problem. 07

Q.9 a) Solve travelling salesperson problem using branch & bound. 10

$$\begin{bmatrix} \infty & 20 & 30 & 10 & 11 \\ 15 & \infty & 16 & 4 & 2 \\ 3 & 5 & \infty & 2 & 4 \\ 19 & 6 & 18 & \infty & 3 \\ 16 & 4 & 7 & 16 & \infty \end{bmatrix}$$

b) Write recursive backtracking algorithm. 05

Q.10 a) Consider the knapsack instance n=3, $(W_1, W_2, W_3)=(2,3,4)$ & $(P_1, P_2, P_3)=(1,2,5)$ and m=6. Solve the above 0/1 knapsack problem using dynamic programming. 08

b) Explain graph traversal technique with example. 07

Total No. of Printed Pages:2

SUBJECT CODE NO:- H-587
FACULTY OF SCINECE AND TECHNOLOGY
T.E. (CSE/IT) (CGPA) (Sem-II)
E-Business Systems (For It)
[Revised]

[Time: Three Hours] **[Max.Marks:80]**

Please check whether you have got the right question paper.

N.B
1. Question. No.1 and Question. No.6 are compulsory.
2. Attempt any two questions from Q. No.2 to Q. No.5 and from Q. No. 7 to Q. No. 10. Of each section.
3. Figure to right indicate full marks.

SECTION -A

Q.1 Attempt any five questions from the following. 10
a) What is e – commerce? Write about its importance.
b) What are the management issues in e- Business?
c) What is an e – business model?
d) What are new customer care objectives?
e) What are CRM process competencies?
f) What is the objective of order acquisition process?
g) What are the elements of selling chain management?
h) What do you mean by cybermediaries business model?

Q.2 Explain
i. Characteristics of an e – Business. 07
ii. Elements of an e – business solution. 08

Q.3 i. Explain in detail various business models write their examples & impact. 08
ii. What do you mean by a business architecture. Explain with suitable diagram. 07

Q.4 i. Explain with suitable example, phases of CRM. 07
ii. Explain the importance and goals of selling chain management. 08

Q.5 Write short notes on the following (Any three) : 15
i. Strategic planning process.
ii. New competitive conditions.
iii. Selling chain infrastructure.
iv. E – business challenges.

SECTION - B

Q.6 Solve any five of the following 10
a) List the activities involved in supply chain management.
b) What is enterprise resource planning?
c) What is e- procurement infrastructure?

d) What is the objective of the concept knowledge management?
e) What do you mean by a safe e – transaction?
f) List- various security protocols in internet.
g) What is a digital signature?

Q.7 A) Explain the importance and steps involved in supply chain planning. 08
B) Explain various capabilities of COTS ERP solutions. 07

Q.8 A) What is e- procurement? Explain e – procurement models. 08
B) Explain in detail implementation of knowledge management concept with a suitable example. 07

Q.9 A) With suitable examples, explain security threats in E- commerce environment. 07
B) With respect to knowledge management explain, performance monitoring & measurement. 08

Q.10 Write short notes on the following (any three) 15
i. Secure E- wallet
ii. ERP architecture.
iii. Fixing root causes in SCM
iv. Symmetric & asymmetric algorithm